VOLLEYPTLP

USSR / Plant Physiology. Mineral Nutrition H-3

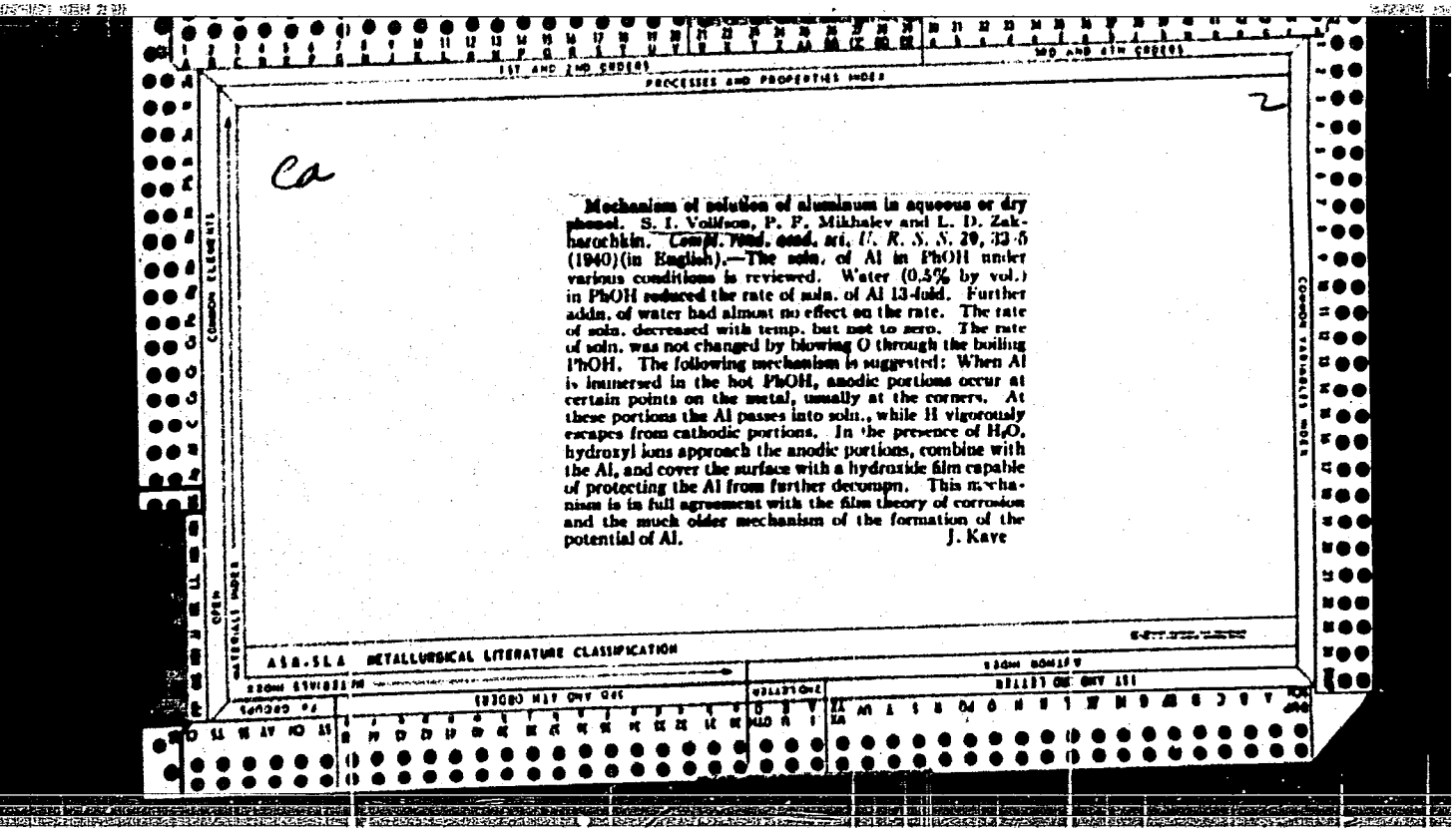
Abs Jour : Ref Zhur - Biol., No 16, 25 Aug 57, No 68945

Author : Mosolov, I.V., Volloidt, L.F.
Title : Entry of Sulfur into Plants from Root and Above-Ground Deposits.

Orig Pub : Udobronie i urozhai, 1956, No 8, 13-17

Abstract : In introducing solutions of $K_2S^{35}O_4$ on upper and lower leaves of beans it was found that after 12 days S^{35} from the upper young leaf migrates in most cases into the beans, also into young leaves and roots. From the old leaf S^{35} migrates into all parts of the plant, but to a lesser degree into reproductive organs than the roots. In the experiment with introduction of $K_2S^{35}O_4$ on a sunflower leaf it was found that S^{35} accumulated in the young growing leaf. In S^{35} root feeding of sunflower, it was shown that S^{35} accumulates mainly in young plant tissues, which are distinguished by high intensity of protein synthesis, and in the reproductive organs.

Card 1/1



Ca

Mechanism of solution of aluminum in aqueous or dry phenol. S. I. Vol'fson, P. F. Mikhalev and L. D. Zakharochkin. *Compt. rend. acad. sci. U. R. S. S.* 29, 33-6 (1940)(in English).—The soln. of Al in PhOH under various conditions is reviewed. Water (0.5% by vol.) in PhOH reduced the rate of soln. of Al 13-fold. Further addn. of water had almost no effect on the rate. The rate of soln. decreased with temp. but not to zero. The rate of soln. was not changed by blowing O through the boiling PhOH. The following mechanism is suggested: When Al is immersed in the hot PhOH, anodic portions occur at certain points on the metal, usually at the corners. At these portions the Al passes into soln., while H vigorously escapes from cathodic portions. In the presence of H_2O, hydroxyl ions approach the anodic portions, combine with the Al, and cover the surface with a hydroxide film capable of protecting the Al from further decompn. This mechanism is in full agreement with the film theory of corrosion and the much older mechanism of the formation of the potential of Al.

J. Kaye

VOLIOSOVICH, K.K.

Stratigraphy of Quaternary sediments in the European North. Mat.po geol.i pol.iskop.Sev.-Vost.Evrop.chasti SSSR no.1:69-78 '61.
(MIRA 14:11)
(Russia, Northern--Geology, Stratigraphic)
(Russia, Northern--Glacial epoch)

BRAEDT, A., prof. (Bucuresti); VOLLRATH, H., prof. (Bucuresti)

Cinematography in teaching geography. Natura Geografie 13 no. 5: 50-53 S-O '61.

VOLLSHKIN, Yu.Ye., (st.Verkhniy Baskunchak); ANDRIYEVSKIY, V.G.; inzhener po remontu (st.Verkhniy Baskunchak)

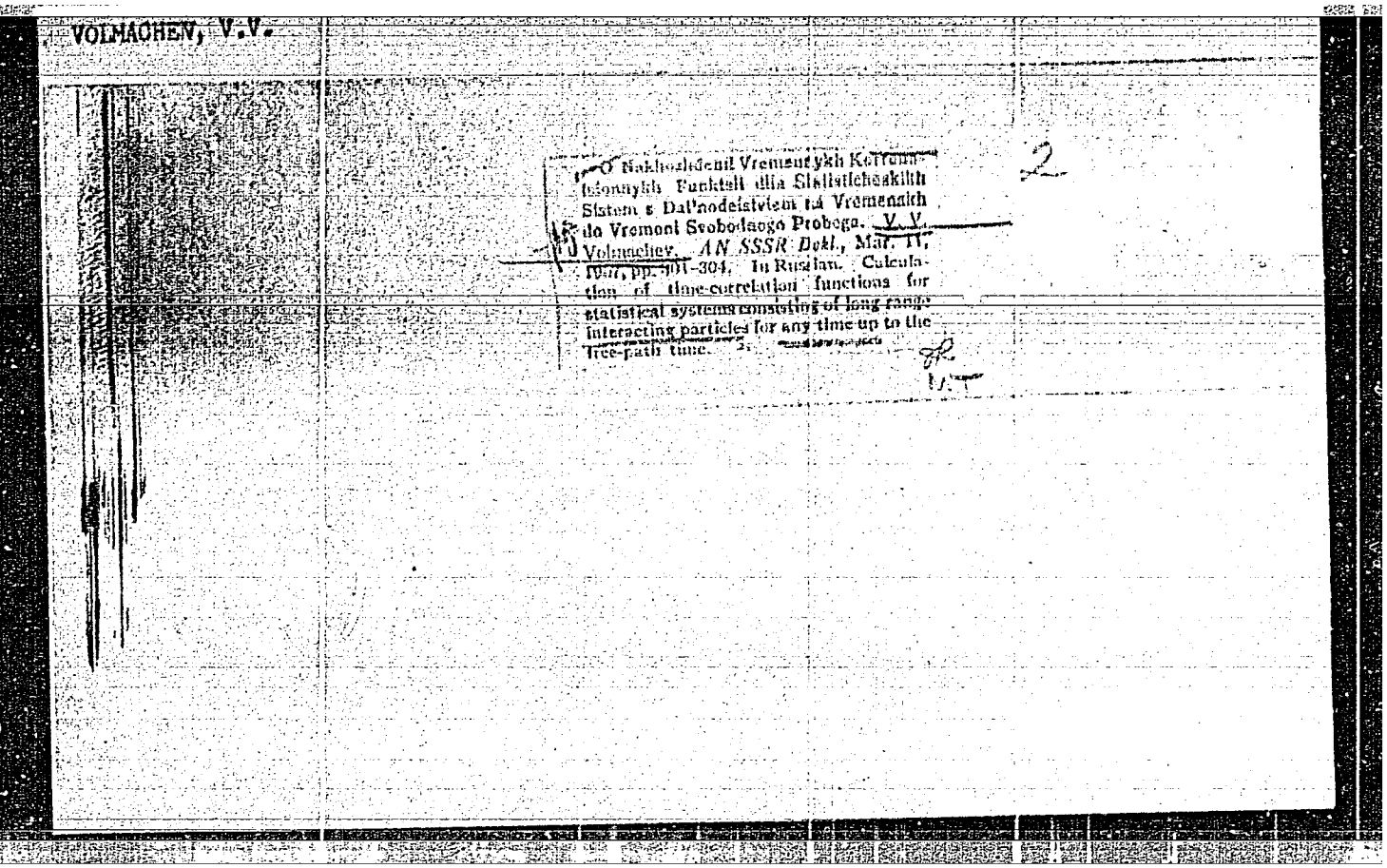
On the operation of gas generator diesel locomotives. Zhel.dor. transp. 39 no.2:78 F '57. (MLRA 10:3)

1. Zamestitel' nachal'nika teplovoznogo depo.
(Diesel locomotives)

VOLLOSOVICH, K. A.

Geological Work on the Novosibirsk Islands. Izv. Akad. Nauk. Vol 16 No 5, 1902

SO: Trudy Arkitcheskogo Nauchno-Issledovatel'skogo Instituta, GUSMP, Council of Ministers, Vol 201, 1948



VOLMACHEV, V.V.

O Nakhozhdenii Vremennykh Korrelyatsionnykh Funktsii dlia Statisticheskikh Sistem s Dal'nodeistviem na Vremennakh do Vremeni Svobodnogo Probega. V. V. Volmachev. *AN SSSR Dokl.*, Mar. IV, 1957, pp. 301-304. In Russian. Calculation of time-correlation functions for statistical systems consisting of long range interacting particles for any time up to the free-path time.

Vol'man, B.L.

18(0); 25(0); 10(6) PHASE I BOOK EXPLOITATION SOV/1993

Ufa. Aviatsionnyy institut

Trudy Vyp. 3 (Transactions of the Ordzhonikidze Aviation Institute, Ufa) Nr 3. Ufa, Bashkirskoye knizhnoye izd-vo, 1957. 222 p. Errata slip inserted. 1,000 copies printed.

Resp. Ed. for this no.: I.A. Bolotovskiy; Editorial Board: I.P. Yemelin (Resp. Ed.), A.N. Rakhmanovich, I.A. Bolotovskiy, S.I. Kalikov, V.A. Vinogradov, and P.D. Mirko; Ed.: M.A. Gurvich; Tech. Ed.: F.G. Gayfullin.

PURPOSE: The book is intended for engineers and scientific workers in the fields of metallurgy, technological processes, and fluid mechanics.

COVERAGE: This volume contains 14 articles dealing with metallurgy and mechanical, aeronautical, and electrical engineering problems. Individual abstracts are given in the Table of Contents.

Transactions of the Ordzhonikidze (Cont.) SOV/1993

Krymskiy, G.A. Inertia of Fuses Under Short-circuit Conditions 199
Several factors affecting the inertia of fuses are analyzed. A table of inertia values which were obtained experimentally is given which are connected with the construction of the fuse and the blowout conditions. References: 4 Soviet, 1 German.

Krymskiy, G.A. Determination of the Energy of an Electric Arc Produced in Switching Off D-C Machinery 205
This paper treats the problem of calculating the energy liberated in an electric arc produced when a d-c circuit is broken, and demonstrates the boundedness of Ryudenberg's formula, applied usually in the calculation of switches. General relationships are presented from which Ryudenberg's formula is obtained as a particular case; a numerical calculation example is given. References: 2 Soviet, 1 English.

Vol'man, B.L. On A Variational Problem in Flight Dynamics 211
Optimum flight paths of aircraft zoom maneuvers are considered. The order of calculating them and the method of performing them are given. References: 2 Soviet.

AVAILABLE: Library of Congress

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8-5-59

VOL'MAN, B.L.

10(0); 18(0); 25(0) PHASE I BOOK EXPLOITATION SOV/2035

Ufa. Aviatsionnyy institut

Trudy, vyp. 2. (Transactions of the Ordzhonikidze Aviation Institute, Ufa) Nr 2. Ufa, Bashkirskoye knizhnoye izd-vo, 1956. 219 p. Errata slip inserted. 1,000 copies printed.

Editorial Board: I.P. Yemelin (Resp. Ed.), A.N. Rakhmanovich, I.A. Belotovskiy, S.I. Kulikov, I.A. Berezin, V.A. Vinogradov, and P.D. Mirko; Resp. Ed. for this number: I.A. Bolotovskiy; Ed. of Publishing House: M.A. Gurvich; Tech. Ed.: F.G. Gayfullin.

PURPOSE: The book is intended for engineers of scientific and industrial institutions.

COVERAGE: This collection is composed of a number of unrelated articles in mechanical, aeronautical (fluid dynamics), metallurgical and other branches of engineering. For further coverage see Table of Contents.

This article gives a solution to problems of torsion in circular section shafts having single flat segmental recesses. The method applied to this solution is similar to that described by the author in Trudy Ufimskogo aviatsionnogo instituta, Nr 1, 1955. There are 2 Soviet references.

This article describes the distribution of circumferential stresses between the splines of a splined joint. Formulas for the determination of transmitted circumferential stresses of the maximum loaded pair of splines are established on the principle that clearances between stressed splines of the shaft and sleeve change according to a sinusoidal law. Data obtained can be applied in designing primary splined joints (assemblies). There are 5 Soviet references.

This article considers aspects of losses and their influence on efficiency of plane belt transmission. Special attention was given to aerodynamic losses in belts and pulleys in view of the considerable effect produced by them on general efficiency of fast moving transmissions and to internal losses which have a decisive effect on the length of life of the belt. For the purposes of checking the accuracy of the obtained data experimental research was supplemented to the theoretical. The following personalities working in this field are mentioned: Ye.M. Gut'yar, N.T. Urazbayev, V.N. Belyayev, B.A. Propin. There are 8 references: 7 Soviet, and 1 German.

The article deals with research on mechanisms for accurate approximate integration and differentiation based on new principles of simulation (modeliy). A detailed description is given with diagrams of the integrator. Personalities mentioned include: M.L. Bykhovskiy and N.G. Bruyevich. There are 8 Soviet references.

The article discusses some important problems of piston ring technology and establishes the causes of qualitative irregularity of piston rings.

The article describes a method of obtaining experimental data on the viscosity of pure double ferrocarbon alloys and triple alloys of iron. It also discusses determination of viscosity of various pig irons, such as, Bessemer, open hearth and cast irons. Personalities mentioned include: A.I. Bachinskiy, Professor A.M. Samarin, and L.A. Shvartsman. There are 11 references: 7 Soviet and 4 German.

C

TOLMAN, B.L.

10(0); 18(0); 25(0) PHASE I BOOK EXPLOITATION SOV/2035

Ufa. Aviatsionnyy institut

Trudy, vyp. 2. (Transactions of the Ordzhonikidze Aviation Institute, Ufa) Nr 2. Ufa, Bashkirskoye knizhnoye izd-vo, 1956. 219 p. Errata slip inserted. 1,000 copies printed.

Editorial Board: I.P. Yemelin (Resp. Ed.), A.N. Rakhmanovich, I.A. Bolotovskiy, S.I. Kulikov, I.A. Berezin, V.A. Vinogradov, and P.D. Mirko; Resp. Ed. for this number: I.A. Bolotovskiy; Ed. of Publishing House: M.A. Gurvich; Tech. Ed.: F.G. Gayfullin.

PURPOSE: The book is intended for engineers of scientific and industrial institutions.

COVERAGE: This collection is composed of a number of unrelated articles in mechanical, aeronautical (fluid dynamics), metallurgical and other branches of engineering. For further coverage see Table of Contents.

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Trudy, vyp. 2. (Transactions of the Ordzhonikidze Aviation Institute, Ufa) Nr 2. Ufa, Bashkirskoye knizhnoye izd-vo, 1956. 219 p. Errata slip inserted. 1,000 copies printed.

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Ufa. Aviatsionnyy institut

Trudy, vyp. 2. (Transactions of the Ordzhonikidze Aviation Institute, Ufa) Nr 2. Ufa, Bashkirskoye knizhnoye izd-vo, 1956. 219 p. Errata slip inserted. 1,000 copies printed.

Editorial Board: I.P. Yemelin (Resp. Ed.), A.N. Rakhmanovich, I.A. Bolotovskiy, S.I. Kulikov, I.A. Berezin, V.A. Vinogradov, and P.D. Mirko; Resp. Ed. for this number: I.A. Bolotovskiy; Ed. of Publishing House: N.A. Gurvich; Tech. Ed.: F.G. Gayfullin.

PURPOSE: The book is intended for engineers of scientific and industrial institutions.

COVERAGE: This collection is composed of a number of unrelated articles in mechanical, aeronautical (fluid dynamics), metallurgical and other branches of engineering. For further coverage see Table of Contents.

Ehrizman, I.A. Graphic Method for/the Determination of Volatile and Heat-producing Properties of Brown Coal 183

The article gives a correlational analysis of the interdependence of the incandescent mass and the exit of volatile products of brown coal. A method for the construction of individual curves, their practical significance, and a method for the composition of tables are given. There are 8 Soviet references.

Ehrizman, I.A. Qualitative Paper-Chromatographic and Luminescent Method of Marking Bituminous Brown coals 207

The article describes methods for investigations of a large number of coals. Results are given in the form of a table. There are 6 Soviet references.

Berezin, I.A. Small Dimension Engine With Emulsion Fuel Injection 211

This article investigated the possibility of using emulsion injection of fuel in small-dimension engines. Design of a mixing pump and of a slide-valve pump is described. There are 6 Soviet references.

AVAILABLE: Library of Congress

IS/sfm 7
8-17-59

S/124/61/000/008/013/042
A001/A101

AUTHOR: Vol'man, B.L.

TITLE: On one variation problem in dynamics of flight

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 8, 1961, 28, abstract 8B169 ("Tr. Ufimsk. aviats. in-ta", 1957, no. 3, 211 - 221)

TEXT: The aim of this study is to determine optimum trajectories of aircraft vertical roll, the sequence of their calculations and the method of prescribing them to the pilot for their execution. In equations of aircraft motion, excessive thrust is held as a function of altitude and velocity of flight, the dependence of excessive thrust on normal overload is not taken into account. The determination of optimum trajectories is reduced to finding two functions of aircraft horizontal displacement, altitude and velocity of aircraft. These functions minimize time expenditure for horizontal displacements at the existence of non-holonomic connection, resulting from the motion equations, and at the given initial and final velocity values. The altitude attained during the aircraft evolution is a quantity sought for which is determined in the process of calculations. Euler's equations in this case are non-linear and are solved by numerical

Card 1/2

On one variation problem in dynamics of flight

S/124/61/000/008/013/042
A001/A101

methods. An example is given for a subsonic aircraft with a turbo-jet engine. The result of calculations and analysis of equations permit recommendation for execution of optimum vertical rolls at all altitudes with a constant normal overload equal to factor two.

G. Aronin

[Abstracter's note: Complete translation]

Card 2/2

SOV/123-59-16-63947

Translation from: Referativnyy zhurnal. Mashinostroyeniye, 1959, Nr 16, p 45 (USSR)

AUTHOR: Vol'man, B.L.

TITLE: Inertia Accumulator With Hydraulic Drive

PERIODICAL: Sb. Ufimsk. gor. nauchno-tekhn. konferentsiya, posvyashch. vypolneniyu direktiv XX s"yezda KPSS po tekhn. progressu v prom-sti, Ufa, 1957, 182-196

ABSTRACT: A short investigation is made to determine the basic working rules of inertia accumulators with hydraulic drive. It is noted that the direct weights of devices for the storage of the same energy - in the form of elastically deformed steel, compressed air or high-speed rotating flywheel - are related to each other as 50 : 5 : 1. It is pointed out that the inertia accumulator (fly-wheel) permits in the simplest way to quickly store energy and to give back this stored energy with the aid of a hydromechanic transmission which is switched over automatically. The investigated installation represents a flywheel (1) (see Figure), rigidly connected with a pump of complex hydrotransmission 2, which combines a hydrotransformer (G) and a turbocoupling (T). The turbine G 3 is rigidly connected with the shaft 4 of the transmission, which by way of G receives

Card 1/2

Inertia Accumulator With Hydraulic Drive

SOV/123-59-16-63947

the energy, stored by the flywheel. The flywheel itself is accelerated to maximum revolutions through the second T, the pump 5 of which is rigidly fastened to the shaft, but the turbine 6 of this T fits freely on the shaft and is rigidly fixed to the drive of the planetary multiplier 7. The introduction of the latter into the scheme is caused by the fact that the flywheel should generally be accelerated to maximum revolutions when the machine is working on the minimum number of revolutions. For the return of the stored energy of the flywheel, the transformer G is quickly filled up with oil, but T is emptied. In this way the flywheel transfers the stored energy to the transmission which is accelerated to a high number of revolutions. When the machine turns only slowly, G is free of oil and T works in a completely filled state with a minimum slide, and the flywheel is accelerated. In this way T is actually used for stepless regulation of the number of revolutions of the flywheel while the transmission is turning at variable speeds. In order to switch off the inertia accumulator, the oil is evacuated from T and G. The equation of motion of the system is derived, the expressions for determining the number of revolutions of the flywheel and transmissions and other parameters are given, which permit to compute the structural elements. 7 figures.

S.I.P.

Card 2/2

SOV/124-58-8-8823

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 8, p 70 (USSR)

AUTHOR: Vol'man, B.L.

TITLE: A Hydraulically Driven Inertial Accumulator (Inertsionnyy akkumulyator s gidroprivodom)

PERIODICAL: V sb.: Ufimsk. gor. nauchno-tekhn. konferentsiya, posvyashch. vypolneniyu direktiv XX s"yezda KPSS po tekhn. progressu v prom-sti. Ufa, 1957, pp 182-196

ABSTRACT: In the operation of many machines the necessity exists for storing up energy so that at a given time it can be quickly released for the purpose of accelerating the machine's action. Energy of this type, i.e., for storage, can be accumulated mechanically either in the form of the potential energy of an elastically deformed body or in that of the kinetic energy of a rapidly turning flywheel. Both of these methods involve increasing the weight of the machine. If the three energy-storage devices---functioning on the principle of elastically deformed steel, compressed air, and a rapidly turning flywheel, respectively---were to store the same amount of energy,

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A Hydraulically Driven Inertial Accumulator

the ratio of their direct weights would be 50:5:1, respectively. Hence, the most efficient method for storing up energy is with an inertial accumulator, which makes it possible by simple means, with the aid of automatic-shift fluid couplings, to store and release energy quickly. The author investigates the performance of an inertial energy accumulator of this type having a hydraulic drive system consisting of a hydraulic torque converter. Investigated also are the laws that govern the operation of an inertial energy accumulator, and the author works out the design relationships needed for the creation of such a device. It is stressed that, when for a hydraulically driven inertial accumulator the optimal parameters are selected, 60-70% of the stored-up energy is transmitted to the machine, with 25-30% passing off as heat and approximately 7-10% remaining unused.

Yu.A. Lashkov

VOL'MAN, G.L.

AZBUKIN, Yu.I. inzhener; VOL'MAN, G.L., inzhener.

Self-uncoupling coupling of electric starting motors for synchronous compensators. Elek.sta. 26 no.6:52-53 Je '55. (MLRA 8:6)
(Electric motors)
(Electric transformers)

ORLOVA, L.M., inzh.; YEVSTRATOVA, V.M., inzh.; VOL'MAN, I.A., tekhnik

Electrolytic polishing of certain die steels. [Nauch. trudy] ENIKMASha 7:135-139 '63. (MIRA 16:7)

(Tool steel) (Electrolytic polishing)

AVER'YANOVA, L.L.; FIDEL'MAN, Ye.S.; VOL'MAN, I.B.

Changes in the content of lysozyme in the saliva of rheumatic children under the effect of bicillin therapy. Antibiotiki 10 no.5:445-447 My '65. (MIRA 18:6)

1. Laboratoriya immunopatologii serdechno-sosudistoy sistemy (zav. - prof. D.F.Pletsityy) Instituta normal'noy i patologicheskoy fiziologii AMN SSSR i Detskaya poliklinika No.30, Moskva.

TUROVA, F.D.; BOTUNOVA, L.M.; BOSIK, R.N.; DEMCHENKO, M.P.; VOL'MAN, I.B.

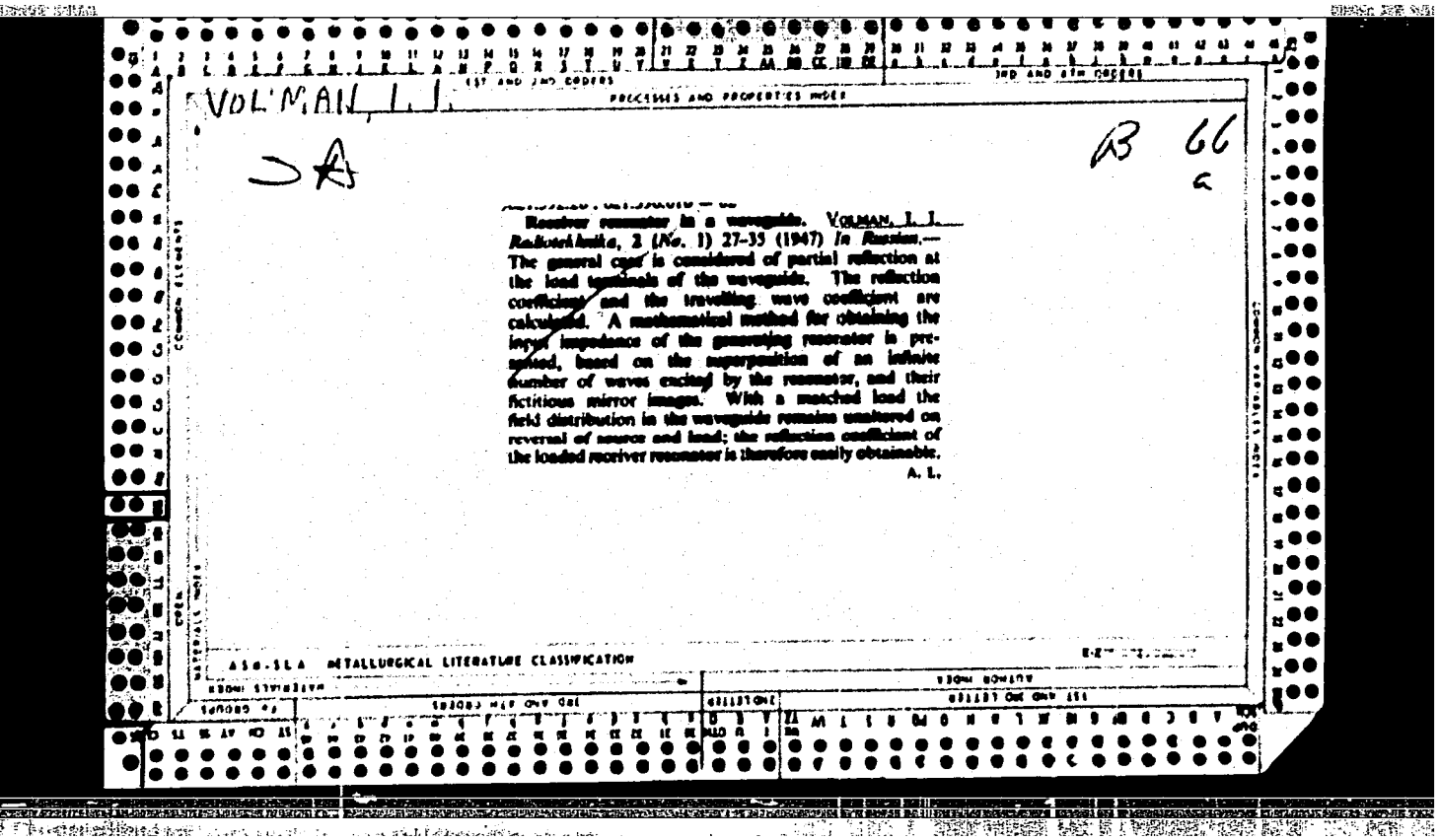
Care ofconvalescents following pneumonia. Pediatriia 38 no. 3:72-75 Mr '60. (MIRA 14:1)

(PNEUMONIA)

VOL'MAN, I.I.

Trends in knitwear styles for 1966. Tekst. prom. 25 no.9: 26-29 S '65. (MIRA 18:10)

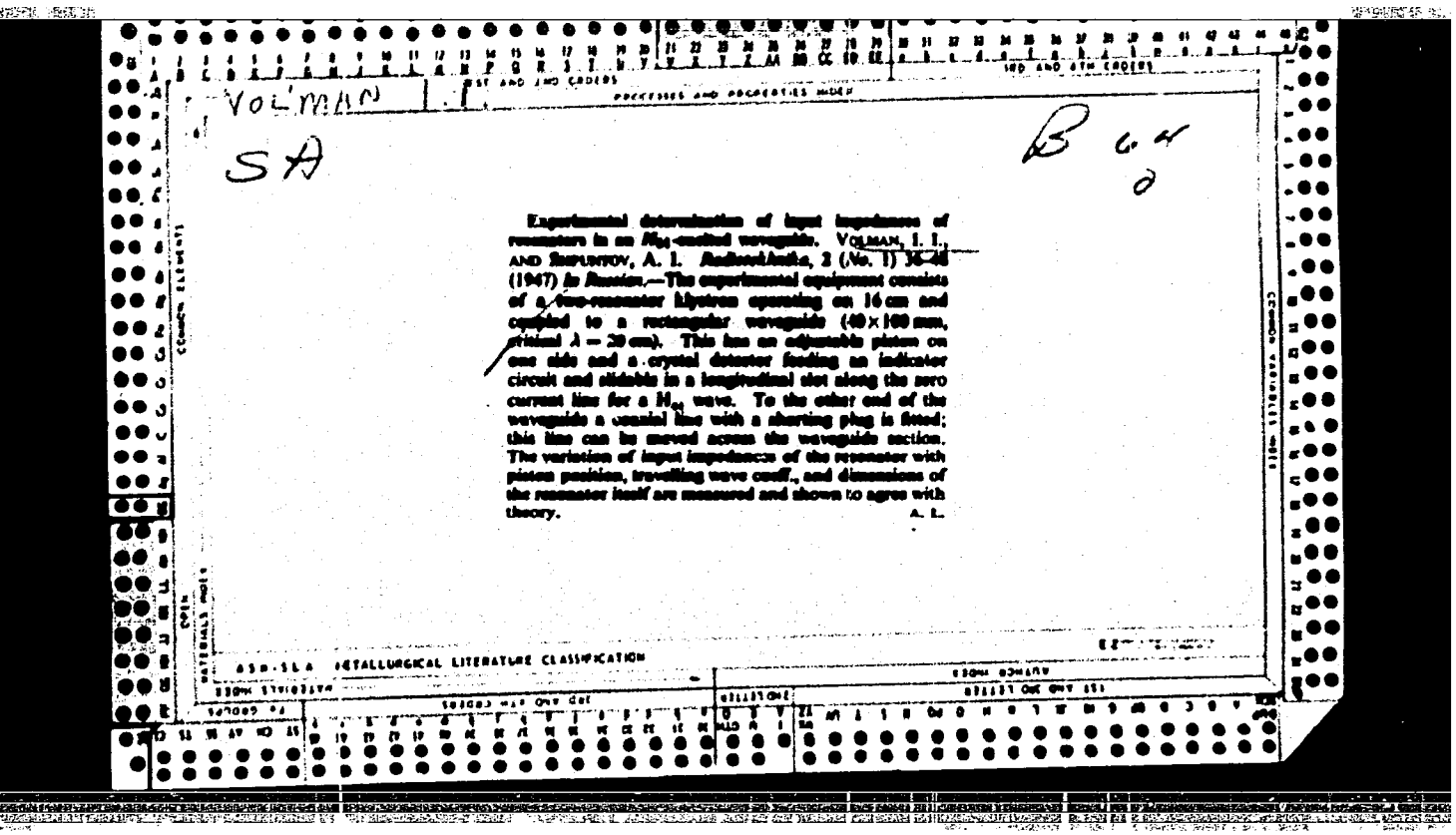
1. Glavnyy khudozhnik Doma modeley trikotazhnoy promyshlennosti.



VOL'MAN, L. I.

Receiver resonator in a waveguide. VOL'MAN, L. I. *Radiotekhnika*, 2 (No. 1) 27-35 (1947) *In Russian.*— The general case is considered of partial reflection at the load terminals of the waveguide. The reflection coefficient and the travelling wave coefficient are calculated. A mathematical method for obtaining the input impedance of the generating resonator is presented, based on the superposition of an infinite number of waves excited by the resonator, and their fictitious mirror images. With a matched load the field distribution in the waveguide remains unaltered on reversal of source and load; the reflection coefficient of the loaded receiver resonator is therefore easily obtainable. A. L.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



VOLMAN

SA

B 64 0

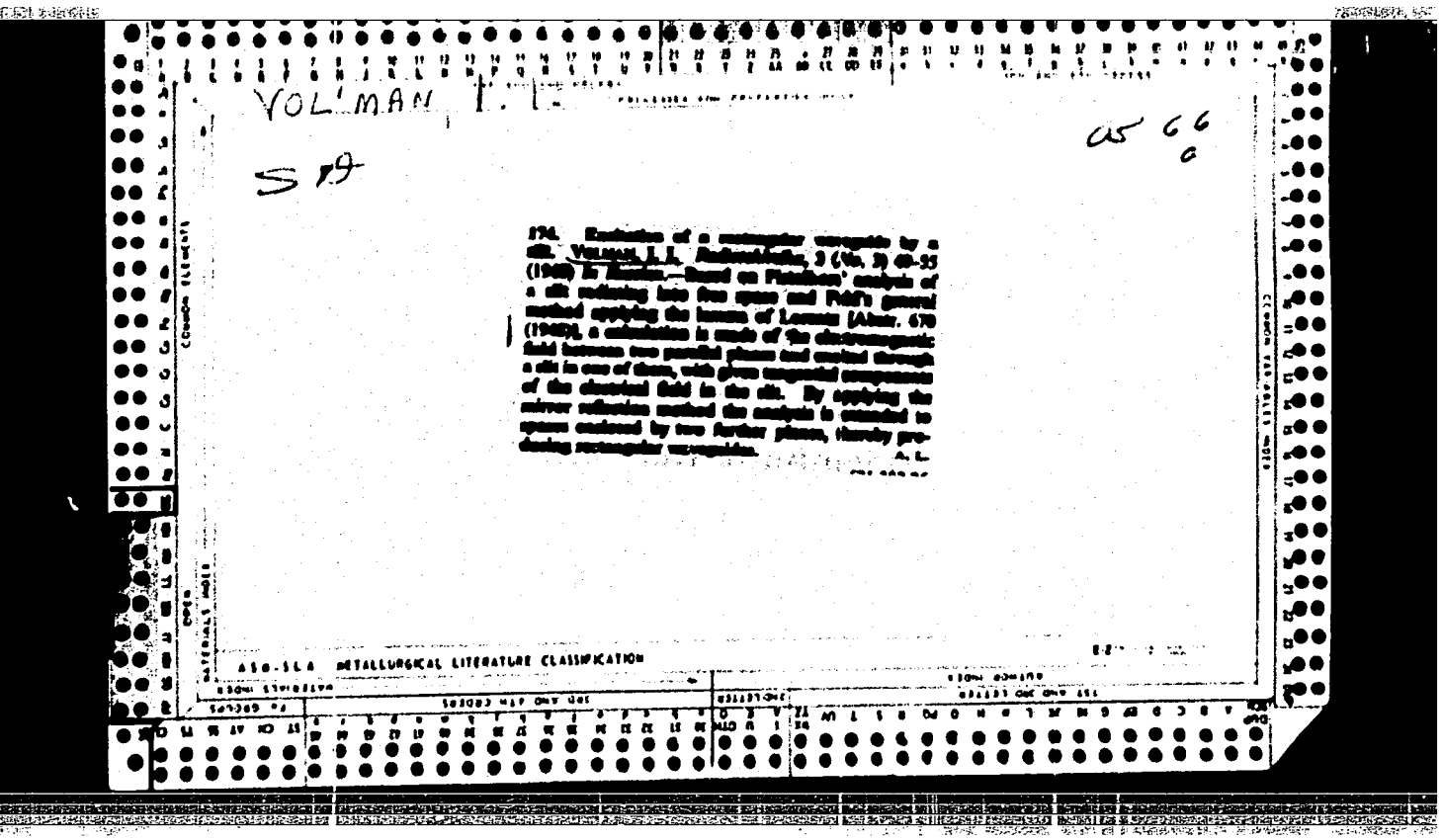
Experimental determination of input impedance of resonators in an H_{01}-excited waveguide. VOLMAN, I. I. AND SHUPLYOV, A. I. *Radiotekhnika*, 2 (No. 1) 36-41 (1947) *In Russian.*—The experimental equipment consists of a two-resonator klystron operating on 16 cm and coupled to a rectangular waveguide (40 × 100 mm, critical $\lambda = 20$ cm). This has an adjustable piston on one side and a crystal detector feeding an indicator circuit and slidable in a longitudinal slot along the zero current line for a H_{01} wave. To the other end of the waveguide a coaxial line with a shorting plug is fixed; this line can be moved across the waveguide section. The variation of input impedance of the resonator with piston position, traveling wave coeff., and dimensions of the resonator itself are measured and shown to agree with theory. A. L.

669.1.5.4 METALLURGICAL LITERATURE CLASSIFICATION

VOL'MAN, I.I.

Styles in knit wear for 1962. Tekst.prom.22 no.3:15-18 Mr '62.
(MIRA 15:3)

1. Khudozhestvennyy rukovoditel' Doma modeley trikotazhnykh izdeliy.
(Fashion)(Knit goods)



VOL'MAN, I.I.

Knit goods styles in 1963. Tekst.prom. 23 no.5:39-43 My '63. (MIRA 16:5)

1. Glavnyy khudozhestvennyy rukovoditel' Vsesoyuznogo Doma modeley trikotazhnykh izdeliy.

(Knit goods) (Fashion)

BADIRYAN, L.G.; FLEKSNER, S.Ya.; VOL'MAN, I.V.

Outbreak of streptococcal food infection. Gig. i san. 24 no.5:58-59 My '59. (MIRA 12:7)

1. Iz Moskovskoy gorodskoy sanitarno-epidemiologicheskoy stantsii.
(STREPTOCOCCAL INFECTIONS, epidemiology,
food pois. outbreak (Rus))
(FOOD POISONING, epidemiol.
streptococcal outbreak (Rus))

VOLMAN, L. I.

S-A

B 64

0

12

Experimental determination of input impedances of resonators in an H_{01}-excited waveguide. VOLMAN, L. I., AND SHPUNTOV, A. I. *Radiotekhnika*, 2 (*No.* 1) 36–48 (1947) *In Russian.*—The experimental equipment consists of a two-resonator klystron operating on 16 cm and coupled to a rectangular waveguide (40 × 100 mm, critical λ = 20 cm). This has an adjustable piston on one side and a crystal detector feeding an indicator circuit and slidable in a longitudinal slot along the zero current line for a H_{01} wave. To the other end of the waveguide a coaxial line with a shorting plug is fitted; this line can be moved across the waveguide section. The variation of input impedances of the resonator with piston position, travelling wave coeff., and dimensions of the resonator itself are measured and shown to agree with theory.

A. L.

GUREVICH, Lev Isayevich, kand. tekhn. nauk; MATKHANOV, Vasiliy Nikolayevich, inzh.; SAVIN, M.G., inzh., retsenzent; VOL'MAN, L.N., red.

[Masters of the blue flame] Mastera golubogo ognia. Irkutsk, Vostochno-Sibirskoe knizhnoe izd-vo, 1964. 77 p. (MIRA 18:3)

KRASNOV, Izrail' Davidovich, kand. ekon. nauk; VOL'MAN, I.N., red.

[Methods of raising the scientific level of capital construction planning; based on materials of the East Siberian Economic Region] Puti povysheniia nauchnogo urovnia planirovaniia kapital'nogo stroitel'stva; po materialam Vostochno-Sibirskogo ekonomicheskogo raiona. Irkutsk, Vostochno-Sibirskoe knizhnoe izd-vo, 1964. 149 p. (MIRA 18:6)

VOL'MAN, L.O.

Result of antituberculosis vacination in rural area [with summary in French]. Probl.tub. 36 no.6:13-15 '58 (MIRA 11:10)

1. Glavnyy vrach rayona Kremennoye Luganskoy oblasti, USSR.
(BCG VACCINATION,
in Russia (Rus))

VOL'MAN, N.S., dotsent

Effect of the nonsymmetry of magnetomotive forces on the equalizing currents in d.c. machinery with ordinary armature winding. Trudy LTITSBP no.10:105-117 '62. (MIRA 16:8)

(Electric motors, Direct current)

VOL'MAN, Nikolay Stanislavovich; GRACHEV, A.I., red.

[Electric power supply of woodpulp and paper enterprises] Elektrosnabzhenie tsellyulozno-bumazhnykh predpriiatii. Moskva, Lesnaia promyshlennost', 1964. 349 p. (MIRA 17:11)

BUSHMELEV, Vasiliy Afanas'yevich; VOL'MAN, Nikolay Stanislavovich; BALDASOV, Ye.Ya., red.; FEDOROV, B.M., red.izd-va; KORNYUSHINA, A.S., tekhn.red.

[Processes, equipment, and machinery of the woodpulp and paper industry; textbook for special secondary schools] Protsessy, apparaty i oborudovanie tselliulozno-bumazhnogo proizvodstva; uchebnik dlia srednikh spetsial'nykh uchebnykh zavedenii. Moskva, Goslesbumizdat, 1960. 422 p. (MIRA 13:11)
(Paper industry--Equipment and supplies)

KULIKOVSKIY, Petr Konstantinovich, kand. tekhn.nauk; SHUSTOV, Aleksandr Dmitriyevich, inzh.; VOL'MAN, N.S., red.; SOBOLEVA, Ye.M., tekhn. red.

[Electric drives for machinery in the cellulose and paper-making industry]Elektroprivod mashin tselliulozno-bumazhnoi promyshlennosti. Moskva, Gosenergoizdat, 1962. 371 p. (MIRA 16:4)

(Cellulose)
(Paper-making machinery--Electric driving)

VOL'MAN, S.B.

Small 2 ton-capacity fork lift truck. Avt. prom. 30 no.7:47 Jl '64.
(MIRA 17:9)

1. Glavnoye spetsial'noye konstruktorskoye byuro po avtopogruzchikam.

KIRPICHNIKOV, O.B.; VOL'MAN, V.G.

Use of a VICKhOM penetratometer for determining soil density up to 60 cm. Trakt. i sel'khozmash. 31 no.12:18 D '61. (MIRA 15:1)

1. Spetsial'noye konstruktorskoye byuro zavoda im. Oktyabr'skoy revolyutsii.

(Soil mechanics)

L 05731-67 EWT(1) GD

ACC NR: AT6022276 SOURCE CODE: UR/0000/66/000/000/0057/0062

AUTHOR: Vol'man, V. I.; Muravtsov, A. D.

ORG: none

TITLE: Calculation of the ferrite-and-dielectric-loaded waveguide Y-circulator

SOURCE: Vsesoyuznaya nauchnaya sessiya, posvyashchennaya Dnyu radio. 22d, 1966. Sektsiya kvantovoy elektroniki. Doklady. Moscow, 1966, 57-62

TOPIC TAGS: waguide circulator, waveguide element

ABSTRACT: Circulation equations for a Y-circulator with a ferrite cylinder inside a dielectric bushing are set up; assumptions: (a) the amplitude of the first azimuth harmonic of the electric field on the bushing surface substantially exceeds the amplitudes of all other harmonics; (b) one of the nodes of the standing wave formed on the bushing surface is located along the axis of the arm being isolated. The equations contain 7 independent parameters; 5 of them must be specified, and 2 can be found from the solution. The parameter selection is limited by the requirement that the isolation between the circulator arms should be 20 db or more. A calculation procedure and auxiliary curves are supplied. An experimental verification is claimed which revealed errors of 8—20% between theoretical and experimental values. [03]
Orig. art. has: 4 figures and 5 formulas.

SUB CODE: 09 / SUBM DATE: 11Apr66 / ORIG REF: 001 / ATD PRESS: 5046

Card 1/1

VOL'MAN, V.I.

Ferrite switches. Radiotekhnika 18 no.8:24-30 Ag '63.
(MIRA 16:10)

1. Deystvitel'nyy chlen Nauchno-tekhnicheskogo obshchestva radiotekhniki i elektrosvyazi imeni Popova.

BR

ACCESSION NR: AP4026145 S/0108/64/019/003/0019/0024

AUTHOR: Vol'man, V. I. (Active member)

TITLE: Principle of operation and design method of waveguide Y-circulators

SOURCE: Radiotekhnika, v. 19, no. 3, 1964, 19-24

TOPIC TAGS: waveguide, waveguide circulator, waveguide Y circulator, waveguide junction, ferrite in waveguide

ABSTRACT: The functioning of an H-plane Y-junction circulator with a ferrite placed at its center is explained. The circulator can be used as a high-speed microwave switch without any moving mechanical parts. It is assumed that the electric-field-intensity distribution at the dotted line (see Enclosure 1) is proportional to this function:

$$f_1(x) = \begin{cases} \sin\frac{2\pi x}{a_1}, & \text{with } 0 \leqslant x \leqslant \frac{a_1}{2} \\ 0 & \text{with } \frac{a_1}{2} \leqslant x \leqslant a_1 \end{cases}$$

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ACCESSION NR: AP4026145

when the energy is admitted to the arm 2. Frequency variation brings about a change in the phase velocity and the coupling factor of H_{20}, H_{30}, and H_{10} modes. The best ferrite shape must result in a minimum change of the above parameters. The method of cross sections (K. A. Barsukov, Radiotekhnika i elektronika, v. 4, no. 8, 1959) is used for analyzing the operation and calculating the circulators. The method is valid for any shape of the ferrite element. Orig. art. has: 7 figures and 13 formulas.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi (Scientific and Technical Society of Radio Engineering and Electrocommunication)

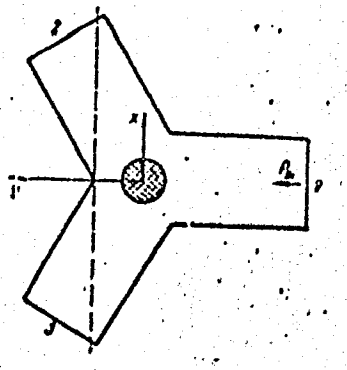
SUBMITTED: 21Dec62 DATE ACQ: 16Apr64 ENCL: 01

SUB CODE: EC NO REF SOV: 004 OTHER: 003

Card 2/3

ACCESSION NR: AP4026145

ENCLOSURE: 01



Wavoguido Y-circulator

Card 3/3

L 41550-65 EWT(1)/EEC-4/EWA(h) Pe-4/Pac-4/Peb/Pi-4/Pj-4
ACCESSION NR: AP5009074 UR/0108/65/020/003/0021/0030

31
28
B

AUTHOR: Vol'man, V. I. (Active member)

TITLE: Design of a waveguide Y-circulator 25

SOURCE: Radiotekhnika, v. 20, no. 3, 1965, 21-30

TOPIC TAGS: Y circulator, waveguide circulator

ABSTRACT: A number of Western and Soviet articles have suggested formulas for designing Y-circulators which yield inadequate results. The present article offers an approximate method of design based on the presumption that the structure of the electric field at the ferrite-cylinder surface is similar to the structure resulting from the diffraction of a plane wave by a magnetized ferrite cylinder. This field distribution was verified experimentally on a slightly modified J. H. Collins et al. hookup (Electronic Engg., v. 35, no. 426, 1963). These conclusions are offered: (1) With definite relations between the ferrite parameters and dimensions, an electric-field standing wave is established at the ferrite-cylinder surface; (2) Application of an external magnetic field turns the electric-field distribution curve about the cylinder axis through an angle θ_0 proportional to the magnetic-

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L 41550-65
ACCESSION NR: AP5009074

field strength; (3) Necessary and sufficient conditions for normal operation of a Y-circulator are given by formulas 14 and 15; (4) The band width of a Y-circulator depends on the ferrite dielectric constant: with lower constants the band is wider; (5) The power loss in a Y-circulator is largely determined by the magnetic loss in the ferrite and by its dielectric constant. "In conclusion, the author wishes to thank G. Z. Ayzenberg and V. V. Nikol'skiy for their valuable hints during a discussion and to R. I. Perets for his great help and constant attention." [03]
Orig. art. has: 11 figures and 30 formulas.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi im. A. S. Popova (Scientific and Technical Society of Radio Engineering and Electrocommunication)

SUBMITTED: 15Dec63 ENCL: 00 SUB CODE: EC

NO REF SOV: 005 OTHER: 006 ATD PRESS: 32:

Card 2/2

L 28516-66 EWA(h)/EWT(1)
ACC NR: AP6007151 SOURCE CODE: UR/0108/66/021/002/0031/0035

37
36
B

AUTHOR: Vol'man, V. I. (Active member)

ORG: Scientific and Technical Society of Radio Engineering and Electrocommunication (Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi)

TITLE: Waveguide Y-circulator with a sphere

SOURCE: Radiotekhnika, v. 21, no. 2, 1966, 31-35

TOPIC TAGS: waveguide, waveguide circulator, ferrite circulator, waveguide element, electromagnetic wave diffraction, standing wave

ABSTRACT: The ferrite-sphere diameter is found by solving a problem of diffraction of electromagnetic waves by a dielectric sphere and by formulating the conditions of existence of a standing wave of the first field harmonic on the sphere surface. The wave arriving at the sphere is assumed to be planar, and the effect of the waveguide metal walls on both sides of the sphere is neglected (the

Card 1/2 UDC: 621.372

introduced error is 10—15%). The condition of an electric standing wave on the sphere surface (with a TE_{10}-mode in one of the circulator arms) is described by a differential equation; the roots of this equation given as curves permit determining the sphere diameter. An experimental verification with a ferrite sphere of 8.95-mm diameter at 10.557 Gc is reported. The circulator frequency band was widened (to 11.5%) by slipping a polystyrene bushing over the ferrite sphere. No appreciable parameter variation was observed within +15 +70C temperature change or ±10% magnetic field variation. "The author wishes to thank A. D. Muravtsev for his great help in experimental work." Orig. art. has: 7 figures and 8 formulas.

SUB CODE: 09 / SUBM DATE: 05Jun64 / ORIG REF: 003

L 40035-66 EWT(1) GD

ACC NR: AT6022177 SOURCE CODE: UR/0000/66/000/000/0063/0069 35

AUTHOR: Vol'man, V. I. B+1

ORG: none

TITLE: Waveguide Y-circulator with a sphere 25

SOURCE: Vsesoyuznaya nauchnaya sessiya, posvyashchennaya Dnyu radio, 22d, 1966. Sektsiya kvantovoy elektroniki. Doklady. Moscow, 1966, 63-69

TOPIC TAGS: waveguide circulator, waveguide element, FERRITE

ABSTRACT: It is assumed that the physical processes transpiring in a Y-circulator containing a ferrite sphere are qualitatively equal to those in the circulator containing a ferrite cylinder. In calculating the ferrite sphere size, the equations valid for a dielectric sphere are used, and the conditions of formation of the standing wave of the first electric-field harmonic, on the sphere surface in the planes parallel to equatorial, are assumed. The ferrite-sphere circulator may prove particularly suitable for the millimeter-band equipment because of easier manufacture of small ferrite spheres than cylinders. In an experimental varification, a M-188, 8.95-mm diameter, $\varepsilon = 11.6$ sphere in a 650-oe field ensured a maximum isolation of 35—40 db at 10557 Mc; the passband was fairly narrow. A second isolation maximum at 10757 Mc, 1000-oe was observed. An experimental plot of electric-field distribution at the ferrite-sphere surface in the tuned circulator is shown.

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L 40035-66

ACC NR: AT6022277 O

No appreciable change in the circulator parameters was noticed when the ambient temperature was raised from +15C to +70C (bandwidth, 11.5%). Orig. art. has: 5 figures and 2 formulas. [03]

SUB CODE: 09 / SUBM DATE: 11Apr66 / ORIG REF: 002 / ATD PRESS: 5152

Card 2/2

L 46194-66 EWT(1) IJP(c)

ACC NR: AP6023861 SOURCE CODE: UR/0108/66/021/007/0067/0068

54

B

AUTHOR: Vol'man, V. I. (Active member)

ORG: Scientific and Technical Society [illegible] and Electro-Communications im. A. S. Popov (Nauchno-tekhnicheskiy [illegible] radiotekhniki i elektrosvyazi)

TITLE: Procedures for the control of the [illegible]meters of ferrite cylinders

SOURCE: Radiotekhnika, v. 21, no. 7, 1966, 67-68

TOPIC TAGS: ferrite, waveguide, waveguide frequency, frequency control, resonator

ABSTRACT: The parameters of each ferrite cylinder to be used in a waveguide Y-circulator must be controlled very accurately if good reproducibility of the circulators is to be insured. The author outlines a method for controlling the parameters of the ferrite cylinders to the point that Y-circulators can be reproduced with an optimal tuning frequency deviation of less than ±0.5%. The method makes use of a resonator which is so designed and constructed that any deviation in the parameters of the ferrite cylinder influences the frequency of oscillation of the resonator by an amount equal to the influence the same deviation would have on the optimal tuning frequency of the Y-circulator. Formulas for the optimal tuning frequency and the oscillation frequency of the resonator are shown to have the same dependence upon the parameters of the ferrite cylinder. The relationships were examined experimentally and found to agree very closely with those predicted. The effects of the ellipticity of the fer-

UDC: 621.396.677

Card 1/2

L 46104-66

ACC NR: AP6023861

rite cylinder and the location of the cylinder in the circulator on the tuning frequency of the circulator are discussed. On the basis of experimental results, the author concludes that it is difficult to show which of the ferrite parameters most adversely affects the reproducibility of the tuning frequency of Y-circulators. Orig. art. has: 2 figures, 3 formulas. [14]

SUB CODE: 09/ SUBM DATE: 20Jun65/ ORIG REF: 002/

Card 2/2

I 09970-67 EWT(1) GD
ACC NR: AT6022279 SOURCE CODE: UR/0000/66/000/000/0079/0082

AUTHOR: Vol'man, V. I.; Muravtsov, A. D.

ORG: none

TITLE: Methods of parameter control in ferrite cylinders used in waveguide Y-circulators

SOURCE: Vsesoyuznaya nauchnaya sessiya, posvyashchennaya Dnyu radio. 22d. 1966. Sektsiya kvantovoy elektroniki. Doklady. Moscow, 1966, 79-82

TOPIC TAGS: waveguide, waveguide propagation, waveguide design, ferrite

ABSTRACT: A method for testing ferrite cylinders prior to their installation in circulators is reported. The method consists of placing ferrite cylinders into a specially designed resonant cavity and measuring the resonant frequency of this system. This approach helps to increase ferrite component yield in mass production. Rather than measure the absolute values of resonance, the deviation from a standard reference value is determined. For a cylindrical resonant cavity with a coaxial internal magnetized ferrite cylinder, electromagnetic waves can be sustained if the following relation is satisfied:

$$\frac{J_n(x_0 R)}{Y_n(x_0 R)} = -\frac{J_n(x_0 r_1)}{Y_n(x_0 r_1)} - \frac{2}{\pi x_0 r_1 Y_n^2(x_0 r_1)} \times \frac{1}{\frac{\eta_0}{\eta_1}\left[\frac{J_n'(\varkappa_\perp r_1)}{J_n(\varkappa_\perp r_1)} - \frac{k}{\mu}\frac{n}{\varkappa_\perp r_1}\right] - \frac{Y_n'(x_0 r_1)}{Y_n(x_0 r_1)}}, \quad (1)$$

Card 1/2

where R is the radius of the cavity, r_1 is the radius of the ferrite cylinder. If the resonator dimensions are selected such that

$$Y_1(x_0 R) = 0, \quad (2)$$

then, according to (1) for $n = \pm 1$ at resonant frequency the expression (3) must be true.

$$\frac{\eta_0}{\eta_1}\left[\frac{J_1'(x_1 r_1)}{J_1(x_1 r_1)} \pm \frac{k}{\mu}\frac{1}{x_1 r_1}\right] = \frac{Y_1'(x_0 r_1)}{Y_1(x_0 r_1)}, \quad (3)$$

The numerical computation shows that for $|k/\mu|$ = 0.5 to 0.6 the half sum of the resonant frequencies approximately coincides with the roots of the equation

$$\frac{\eta_0}{\eta_\perp}\frac{J_1'(x_\perp r_1)}{J_1(x_\perp r_1)} = \frac{Y_1'(x_0 r_1)}{Y_1(x_0 r_1)}. \quad (4)$$

It is known that this expression is nearly the same as the one for the operation of a Y-circulator equipped with a ferrite cylinder having optimum properties. Consequently, the ferrite cylinders can be selected for optimum performance on the basis of the indirect measurement of their electrical parameters, using the resonance method. The experimental evaluation of 40 ferrites has shown this test to be highly accurate and useful. Orig. art. has: 5 figures.

SUB CODE: 09,17/ SUBM DATE: 11Apr66/ ORIG REF: 001

Card 2/2 blk

SKLYAROVA, V.K., otv. red.; ARALOVA, V.I., red.; VOL'MAN, V.K., red.; DERZHAVIN, B.A., red.; IVANOVA, V.A., red.; KOMAROVA, V.R., red.; KULICHEV, A.F., red.; MAKAROVA, N.S., red.; NARODETSKIY, red.; PROKOF'YEVA, T.I., red.; PROZOROVA, T.A., red.; RAZUMOVSKAYA, S.V., red.; RODIONOV, V.A., red.; SURGUNOVA, N.S., red.; KHVOSTOV, V.V., red.; KLEYMENOVA, T.A., tekhn. red.

[Men's clothing] Muzhskaia odezhda. Moskva, 1961. 27 p.
(MIRA 15:2)

1. Russia (1923- U.S.S.R.) Gosudarstvennaya planovaya kommissiya. Vsesoyuznyy institut assortimenta izdeliy legkoy promyshlennosti i kul'tury odezhdy.
(Men's clothing)

VOL'MAN, Z. G.

24342 VOL'MAN, Z. G. O primenenii polvodnoy kislochnoy vanny. Trudy Slav. voyen. Gospitalya Voorruk. Sil. SSSR im. akad. Burdenko. VMF. G M., 1949, S. 258-63.

SO: Letopis, No. 32, 1949.

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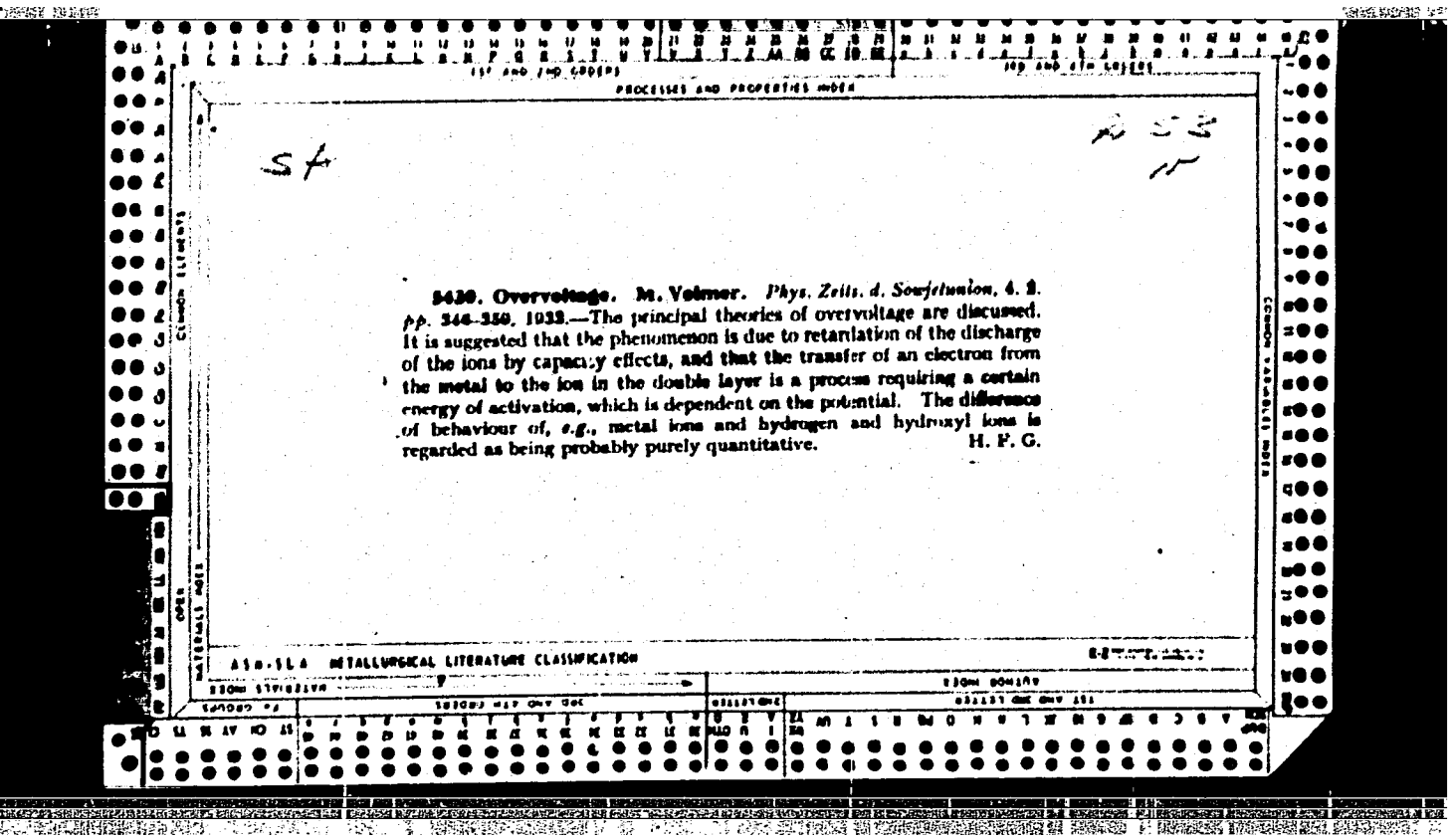
24341 VOL'MAN, Z. Ya. Opyt primeneniya torfa-syrtsa v usloviyakh armeyskogo gospitalya legko ranenykh. Trudy Glav. voyen. Gospitalya Vooruzh. Sil. SSSR. im. akad. Burdenko. VIP. 6. M., 1949, S. 159-62.

SO: Letopis, No. 32, 1949.



5430. **Overvoltage.** M. Volmer. *Phys. Zeits. d. Sowjetunion*, 4. 2. pp. 348-350, 1933.—The principal theories of overvoltage are discussed. It is suggested that the phenomenon is due to retardation of the discharge of the ions by capacity effects, and that the transfer of an electron from the metal to the ion in the double layer is a process requiring a certain energy of activation, which is dependent on the potential. The difference of behaviour of, *e.g.*, metal ions and hydrogen and hydroxyl ions is regarded as being probably purely quantitative. H. F. G.

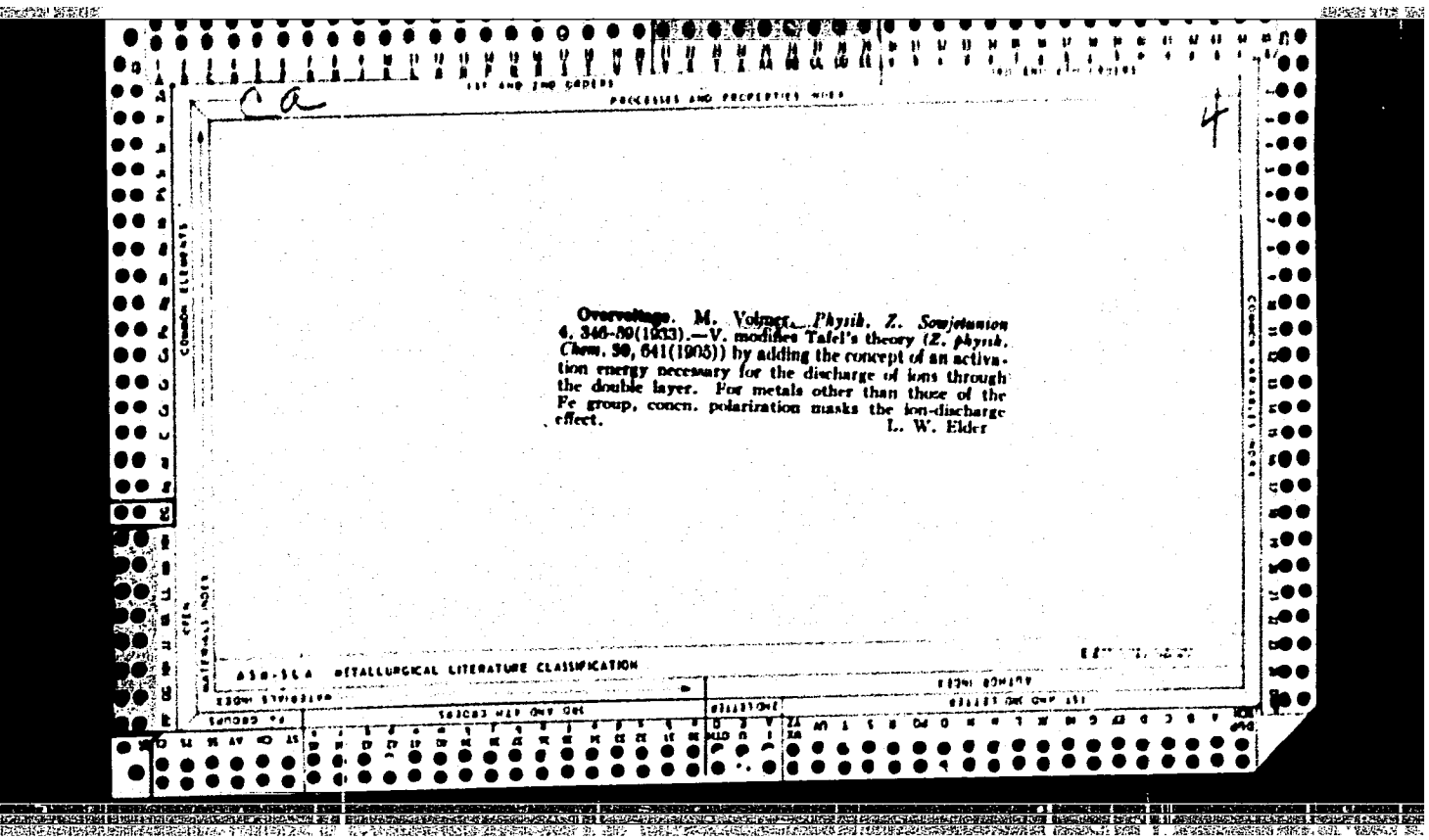
VOLMER, Y.

J. Volmer, "A Simple Geometric Method for the Synthesis of Planar Mechanisms."

paper presented at the 2nd All-Union Conf. on Fundamental Problems in the Theory of Machines and Mechanisms, Moscow, USSR, 24-28 March 1958.

BURSIAN, N.R.; MASLYANSKIY, G.N.; Prinimal uchastiye: VOLMIKHINA, N.K.

Catalytic isomerization of n-pentane on a platinum catalyst. Khim. prom. no.3:166-168 Mr '61. (MIRA 14:3)
(Pentane)



Overvoltage. M. Volmer. *Physik. Z. Sowjetunion* 4, 346–50(1933).—V. modifies Tafel's theory (*Z. physik. Chem.* 50, 641(1905)) by adding the concept of an activation energy necessary for the discharge of ions through the double layer. For metals other than those of the Fe group, concn. polarization masks the ion-discharge effect.

L. W. Elder

VOL'MIR, A. S.

Privedennaia shirina ploskoi paneli pri odnovremennom deistvii szhatiia i sdviga. (Moscow. Voennaia vozdushnaia akademiia Krasnoi Armii. Nauchno-tekhnickeskaia konferentsiia, 1944 g. Trudy, 1945, v.2 Samoletnaia sektsiia, no. 2, p. 85-95, diagrs.)

Title tr.: Reduction coefficient of a flat panel subject to simultaneous compression and shear.

UG630.M67 v. 2, no. 2

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

VOL'MIR, A. S.

O na priazheniiakh v szhatoi tsilindricheskoi paneli posie poteri ustoichivosti. (Moscow. Voennaia vozdushnaia akademiia Krasnoi Armii. Nauchno-tekhnicheskaia konferentsiia, 1944 g. Trudy, 1945, v.2: Samoletnaia sektsiia, no. 2, p. 145-157, diagrs.)

Title tr.: Tension in a compressed cylindrical panel after buckling.

UG630.M67 v.2, no.2

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

USSR/Engineering
Plasticity

Jul 48

"Important Contribution to Soviet Science," Docent A. Volmir, Cand Tech Sci, Lt Col Engr Ye. Kononenko, Docent, Cand Tech Sci, 5½ pp

"Vest Vozdush Flota" No 7 (352)

Summarizes A. A. Il'yushin's work on theory of plasticity. Although a complete translation of Il'yushin's paper was published in US in 1947 (NACA Technical Note No 1115), certain American authors do not acknowledge their indebtedness to him.

FDB

16/49T55

KORENEV, B.G., doktor tekhnicheskikh nauk, professor, redaktor;
VOL'MIR, A.S., kandidat tekhnicheskikh nauk, redaktor.;
PUL'KINA, Ye.A., tekhnicheskiy redaktor.

[Studies in the dynamics of structures] Issledovaniia po dinamike sooruzhenii. Pod red. B. G. Koreneva. Moskva, Gos. izd-vo stroitel'noi lit-ry. 1951. 159 p. (MLRA 8:9)
[Microfilm]

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(Structures, Theory of)

VOL'MAN, A.S.

BABKIN, S.I., kandidat tekhnicheskikh nauk; BALAKSHIN, B.S., professor, doktor tekhnicheskikh nauk; BEYZEL'MAN, R.D., inzhener; BELYAYEV, V.N., kandidat tekhnicheskikh nauk; BIRGER, I.A., kandidat tekhnicheskikh nauk; BOGUSLAVSKIY, P.Ye., kandidat tekhniceskikh nauk; BOROVICH, L.S., kandidat tekhnicheskikh nauk; VOL'MAN, A.S., professor, doktor tekhnicheskikh nauk; GONIKBERG, Yu.M., inzhener; GORODETSKIY, I.Ye., professor, doktor tekhnicheskikh nauk; GORDON, V.O., professor; DIMENTBERG, F.M., kandidat tekhnicheskikh nauk; DOSCHATOV, V.V., inzhener, IVANOV, A.G., kandidat tekhnicheskikh nauk; KIMASOSHVILI, R.S., professor; KODNIR, D.S., kandidat tekhnicheskikh nauk; KOLOMIYTSEV, A.A., kandidat tekhnicheskikh nauk; KRUTIKOV, I.P., kandidat tekhnicheskikh nauk; KUSHUL', M.Ya., kandidat tekhnicheskikh nauk; LEVENSON, Ye.M., inzhener; MAZYRIN, I.V., inzhener; MALININ, N.N., kandidat tekhnicheskikh nauk; MARTYNOV, A.D., kandidat tekhnicheskikh nauk; NIBERG, N.Ya., kandidat tekhnicheskikh nauk; NIKOLAYEV, G.A., professor, doktor tekhnicheskikh nauk; PETRUSEVICH, A.I., doktor tekhnicheskikh nauk; POZDNYAKOV, S.N., dotsent; PONAMOREV, S.D., professor, doktor tekhnicheskikh nauk; PRIGOROVSKIY, N.I., professor, doktor tekhnicheskikh nauk; PROKIN, B.A., kandidat tekhnicheskikh nauk; RESHETOV, D.N., professor, doktor tekhnicheskikh nauk; SATEL', E.A., professor, doktor tekhnicheskikh nauk; SERENSEN, S.V.; SLOBODKIN, M.S., inzhener; SPITSYN, N.A., professor, doktor tekhnicheskikh nauk; STOLBIN, G.B., kandidat tekhnicheskikh nauk; TAYTS, B.A., kandiat tekhnicheskikh nauk; TETEL'BAUM, I.M., kandidat tekhnicheskikh nauk; UMANSKIY, A.A., professor, doktor tekhnicheskikh nauk; FEODOS'YEV, V.I., professor, doktor tekhnicheskikh nauk;

(Continued on next card)

BASKIN, S.I.--- (continued) Card 2.

KHAYT, D.M., kandidat tekhnicheskikh nauk; SYDNOV, V.Ya., kandidat tekhnicheskikh nauk; SHRAYBER, M.M., inzhener, nauchnyy redaktor; SHEDROV, V.S., kandidat tekhnicheskikh nauk, nauchnyy redaktor; TSVETKOV, A.P., dotsent, nauchnyy redaktor; SLESNIKOV, G.I., inzhener, nauchnyy redaktor; MARKUS, M.Ye., inzhener, nauchnyy redaktor; KARGANOV, V.G., inzhener, nauchnyy redaktor; ASHKINAZI, N.S., doktor tekhnicheskikh nauk, professor, redaktor; SOKOLOV, T.F., tekhnicheskiy redaktor

[Manual of machinery manufacture] Spravochnik mashinostroitelia; v trekh tomakh. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry. Vol.3. 1951 1093 p. (MLRA 10:9)

1. Deystvitel'nyy chlen Akademii nauk USSR (for Serensen)
(Machinery)

UMANSKIY, A.A.; AFANAS'YEV, A.M.; VOL'MIR, A.S.; GRIGOR'YEV, Yu.P.; KODANEV, A.I.; MAR'IN, V.A.; PRIGOROVSKIY, N.I.; SNITKO, I.K., redaktor; AKHLAMOV, S.N., tekhnicheskiy redaktor.

[Collection of problems on the strength of materials] Sbornik zadach po soprotivleniiu materialov. Moskva, Gos. izd-vo tekhn.-teoret. lit-ry, 1954. 480 p. (MLRA 7:12)
(Strength of materials)

ANDREYEV, L.Ye., kandidat tekhnicheskikh nauk; BIDERMAN, V.L., kandidat tekhnicheskikh nauk; BOYARSHINOV, S.V., kandidat tekhnicheskikh nauk; VOL'MIR, A.S., doktor tekhnicheskikh nauk; DIMENTBERG, F.M. kandidat tekhnicheskikh nauk; ZASLAVSKIY, S.M., inzhener; KINASOSHVILI, R.S., doktor tekhnicheskikh nauk, professor; KOVALENKO, A.D.,; MAKUSHIN, V.M., kandidat tekhnicheskikh nauk MALININ, N.N., kandidat tekhnicheskikh nauk; PONOMAREV, S.D., doktor tekhnicheskikh nauk; PRIGOROVSKIY, N.I., doktor tekhnicheskikh nauk; TETEL'BAUM, I.M., kandidat tekhnicheskikh nauk; UMANSKIY, A.A., doktor tekhnicheskikh nauk, professor; FEODOS'YEV, V.I., doktor tekhnicheskikh nauk; SERENSEN, S.V., redaktor; TRAPEZIN, I.I., kandidat tekhnicheskikh nauk, redaktor; KARGANOV, V.G., inzhener, redaktor; SOKOLOVA, T.F., tekhnicheskiy redaktor.

[Mechanical engineer's manual; in 6 volumes] Spravochnik mashinostroitelia; v shesti tomakh. Izd.2-e, ispr. i dop. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit. lit-ry, Vol.3, 1955. 563 p. (Mechanical engineering) (MLRA 8:12)

VOL'MIR, Arnol'd Sergeyevich; SNITKO, I.K., redaktor; MURASHOVA, N.Ya., tekhnicheskiy redaktor

[Electric buckling plates and shells] Gibkie plastiki i obolochki. Moskva, Gos. izd-vo tekhniko-teoret. lit-ry, 1956. 419 p.(MLRA 9:11)
(Elastic plates and shells) (Buckling (Mechanics))

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[Theory of bending of circular plates] [Translated from the Chinese] Teoriia gibkikh kruglykh plastinok. Moskva, Izd-vo inostr. lit-ry, 1957. 207 p. (MIRA 11:7)

(Elastic plates and shells)

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TITLE On the Influence of Initial Imperfections on the Stability of Cylindrical Shells under External Pressure. PA - 3013
(O vliyanii nachal'nykh nepravil'nostey na ustoychivost'tsilindricheskikh obolochek pri vneshnem davlenii - Russian)

PERIODICAL Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 2, pp 291-293, (U.S.S.R.)
Received 6/1957 Reviewed 7/1957

ABSTRACT A closed circular-cylindrical shell fortified on the front sides like a hinge is to be subjected to an evenly distributed external pressure. In the case of a deformation of the shell the cross-sections of the front sides are to remain circular, but the points of these cross-sections are to be able to suffer certain radical displacements. For investigating the stability of the shell the author applies on the whole the method of RITZ, and he approximates the function of deflection by means of the expression $\omega = f(\sin\alpha x \sin\beta y + \psi \sin^2\alpha x + \psi)$. Here f denotes the maximum deflection, L - the longitude of the shell, R - its radius, n - the number of waves on its periphery. Moreover it is valid $\alpha=\pi/L$ and $\beta=n/R$. The shape of the central surface of the shell may differ a little from a circle before the beginning of the stress and the total deflection ω_t may be composed of initial deflections ω_a and additional deflections. $\omega_t = \omega_a + \omega = (f_a+f)(\sin\alpha x \sin\beta y + \psi \sin^2\alpha x + \psi)$ is to be valid. With such an assumption the influence of the original irregularities is especially clearly distinguished. Only the initial maximum deflection can be regarded as given. When producing real shells stresses of that kind

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can actually appear. The computation of this deformation is discussed step by step. The results of these computations are shown in a diagram for the case R/h = 112,5 , L/R = 2,2. On the occasion of deformation of a shell a detonation ought to occur under certain circumstances. With the existence of original irregularities the upper critical stress decreases. The lower limit, however, remains almost constant. If the initial maximum deflection enlarges the thickness of the shell, the stress varies monotonously. This and other conclusions are confirmed by tests with shells from duraluminum. (With 1 illustration).

ASSOCIATION Airforce-Engineer Academy "N.E. ZHUKOVSKIY"
PRESENTED BY NEKRASOV, A.I., 15.10.1956
SUBMITTED 12.10.1956
AVAILABLE Library of Congress
Card 2/2

SOV/24-58-10-33/34

AUTHOR: Panovko, Ya. G.

TITLE: A Conference on Elastic Vibrations at the Institute of Mechanical Engineering of the Academy of Sciences of the Latvian SSR (Soveshchaniye po voprosam uprugikh kolebaniy v Institute mashinovedeniya Akademii nauk Latviyskoy SSR)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, 1958, Nr 10, pp 158-159 (USSR)

ABSTRACT: This Conference took place on June 11-15, 1958, in Riga. Altogether over 70 people took part in the conference (apart from those normally based at Riga). Eleven papers were read:
1) "The effect of vibration on systems with dry friction", by I. I. Blekhman and G. Yu. Dzhanelidze (Leningrad).
2) Two papers on dynamic problems in the nonlinear theory of plates and the shells by V. V. Bolotin and A. S. Vol'mir (Moscow).
3) "A qualitative study of the form and frequencies of natural vibrations of thin elastic shells", by A. L. Gol'denveyzer (Moscow).
4) "Some problems in connection with vibrations of elastic rods in the case of large displacements", by Yu. S. Shkenev (Moscow).
5) "Coupled vibrations of vanes and discs in turbines" and

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"Passage through resonance of a linear system with non-linearly varying frequency", by A. P. Filippov (Khar'kov).
6) "Some problems in the dynamics of an ideally elastic stretched thread", by V. A. Svetlitskiy (Moscow).
7) "On the similarity of dynamic processes in solid bodies", by A. G. Nazarov (Yerevan).
8) "The problem of constructional hysteresis", by Ya. G. Panovko (Riga).
9) "Constructional hysteresis in resin-metallic shock absorbers", by G. I. Strakhov (Riga).
The conference was closed with a speech by N. M. Filonenko-Borodich (Moscow).

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Vol'mir, A.S.

24-58-3-4/38

AUTHOR: Bolotin, V. V. (Moscow)

TITLE: Statistical Methods in the Non-Linear Theory of Elastic Shells (Statisticheskiye metody v nelineynoy teorii uprugikh obolochek)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 3, pp 33-41 (USSR)

ABSTRACT: In the non-linear theory of elastic shells two critical loads are distinguished, the lower, at which the bifurcation of the equilibrium shapes of the ideal shell occurs and the upper, where the initial type of elastic deflection first ceases to be unique. Experimentally measured buckling loads lie between the two according to the conditions and thoroughness of the test. A safe load may lie above the lower critical load, because an initial disturbance (deflection) sufficient to overcome the energy barrier separating one condition from the other, will not always be present. It has been pointed out that the lower critical load can be negative (Vol'mir, A.S., "Flexible Plates and Shells", Gostekhizdat, 1956). The "equal energy load" (Karman, Th. and Tsien, H.S., "The Buckling of Thin Cylindrical Shells under Axial Compression", J.Aeronaut.Sci.,Vol.8,Nr 8,1941) ignores the initial deflection. On the other hand, the actual value of

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the initial deflections is required in the Donnel method (Donnel L.H. and Wan C.C., "Effect of Imperfections on Buckling of Thin Cylinders", J.Appl.Mech. Nr 3,1950). The present paper introduces the statistical method to help in the prediction of the safe load and in the evaluation of buckling tests. In this approach, the initial deformation enters as one factor of a group embracing a finite number of parameters by which the state of the shell under load is defined. Most of the parameters are postulated to be random quantities. The statistical distribution law of these random quantities must be assumed but can sometimes be obtained from a sufficient number of tests. Statistical analysis is used to predict the mathematical expectation of the buckling of the shell under a given load. The practical importance of the statistical approach lies in the fact that the probability of buckling for a given multiple of the lower critical load varies predictably with the conditions of the problem. Moreover, the rate of increase of probability with the increase of the multiplying factor also depends on the nature of the shell and its fixing

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in a manner derivable by analysis. Furthermore, the analysis shows the degree of sensitivity of the probability of buckling in relation to the scatter in the initial disturbance (e.g., deformation). Thus a useful factor can be added to the pessimistic safe load, provided the initial deflections and their scatter are controllable. There are 7 illustrations, including 4 graphs, and 5 Soviet and 3 English references.

ASSOCIATION: Moskovskiy energeticheskiy institut (Moscow Power Institute)

SUBMITTED: October 14, 1957.

Card 3/3 1. Elastic shells--Theory

14(10)

AUTHOR: Vol'mir, A. S.

SOV/20-123-5-10/50

TITLE: On the Stability of Cylindrical Shells Under Dynamic Loading (Ob ustoychivosti tsilindricheskikh obolochek pri dinamicheskom nagruzhenii)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 5, pp 806-808 (USSR)

ABSTRACT: An oblique circular cylindrical panel which has a certain initial sag is assumed to be quickly exposed to compressing stresses along the generatrix. The author investigates the time dependence of the deformation of the panel. The following system of differential equations is used for the description of great sags of a thin shell:

$$\frac{D}{h}\nabla^2\nabla^2(w_{total}-w_{in}) = w_{total,xx}\,\Phi_{,yy} + w_{total,yy}\,\Phi_{,xx} - 2w_{total,xy}\,\Phi_{,xy} + \frac{1}{R}\Phi_{,xx} - \frac{\gamma h}{g}w_{total,tt}\,.$$

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$$\frac{1}{E}\nabla^2\nabla^2\Phi = (w_{total,xy})^2 - w_{total,xx}\,w_{total,yy} - (w_{in,xy})^2 + w_{in,xx}\,w_{in,yy} - \frac{1}{R}w_{,xx}$$

$w_{total}(x,y,t)$ denotes the total sag; $w_{in}(x,y)$ - the initial sag; Φ - a function of the stresses in the central surface of the shell; R - the radius of curvature of the central surface; h - the thickness of the shell; D - the cylindrical rigidity; γ - the specific weight of the substance; x,y - the coordinates read along the generatrix and along the arc; ∇ - the Laplace (Laplas) operator; and the indices after the comma - the differentiation with respect to the corresponding variable. The edges of the panel are assumed to be hinge-like open (sharnirno opertyy). The curved surface is approximately described by the expression $w_{total} = f_{total}\sin(\pi x/a)\sin(\pi y/b)$, where a and b denote the length and the breadth of the panel. A similar expression is assumed for the initial sag. The author investigates the case that the curved edges of the panel approach each to another with a given velocity c. It

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is assumed to be $c \ll V$ where V is the velocity of sound propagation in the shell substance. Formulae are deduced for the mutual approximation of the edges and for the sag of a square panel (a = b). The equation for the square panel was integrated according to numerical methods by a computer of the type MPT-9. 2 diagrams give the results of these calculations for a plane plate and for a cylindrical panel. Similar results were found by V. L. Agamirov and by the author for the case that a closed circular cylindrical shell is exposed to an axial compression or to a hydraulic pressure. There are 2 figures and 3 Soviet references.

ASSOCIATION: Voyenno-vozdushnaya akademiya im. N. Ye. Zhukovskogo (Air Force Academy imeni N. Ye. Zhukovskiy)

PRESENTED: July 4, 1958, by Yu. N. Rabotnov, Academician

SUBMITTED: June 26, 1958

SEGAL', Aleksandr Iosifovich, prof., doktor tekhn.nauk; VOL'MIR, A.S., retsenzent; VITASHKINA, S.A., red.izd-va; YERMAKOVA, T.T., tekhn.red.

[Strength and stability of span coverings] Prochnost' i ustoichivost' sudovykh perekrytii. Izd.2., perer. i dop. Moskva, Izd-vo "Rechnoi transport," 1959. 515 p. (MIRA 13:3)
(Hulls (Naval architecture))

SOV/179-59-2-14/40

AUTHORS: Birkgan, A. Yu., Vol'mir, A. S. (Moscow)

TITLE: Investigation of Large Deflections in Rectangular Plates by Means of a Digital Electronic Computer (Issledovaniye bol'shikh progibov pryamougol'noy plastinki pri pomoshchi tsifrovykh elektronnykh mashin)

PERIODICAL: Izvestiya Akademii nauk SSSR OTN, Mekhanika i mashinostroyeniye, 1959, Nr 2, pp 100-106 (USSR)

ABSTRACT: There is little information available relating to the large deflections of plates, owing to the difficulty of integrating the relevant Karman system of non-linear differential equations. In the present paper, a digital electronic computer is applied to calculating the large deflection of a rectangular plate under the influence of a distributed lateral load. The basic equations and the boundary conditions are expressed as finite differences, and the solution obtained by successive approximations. The influence of the size of the mesh on the calculated values is investigated. Tables and graphs are given containing values of the

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Investigation of Large Deflections in Rectangular Plates by Means of a Digital Electronic Computer

deflections of the stresses in the middle surface and of the bending stresses at certain characteristic points on the plate. The values agree with the results of investigations by other methods. There are 5 figures, 3 tables and 7 references, of which 5 are Soviet, 1 German and 1 English.

SUBMITTED: December 19, 1958.

SOV/179-59-3-12/45

AUTHORS: Agamirov, V. L. and Vol'mir, A. S. (Moscow)

TITLE: Behaviour of Cylindrical Shells Under the Effect of a Dynamic Load Consisting of Overall Pressure or Axial Compression (Povedeniye tsilindricheskikh obolochek pri dinamicheskom nagruzhenii vsestoronnego davleniya ili osevogo szhatiya)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1959, Nr 3, pp 78-83 (USSR)

ABSTRACT: It is assumed that the pressure rapidly increases. The equation of motion of elements of a shell is expressed as Eq (1.1) and the equation of deformation as Eq (1.2), where t - time,
x and y - coordinates,
$w_1(x,y,t)$ - full deflection (Eq 1.4),
$w_0(x,y)$ - initial deflection (Eq 1.3),
Φ - function of the tension,
D - cylindrical rigidity,
R and h - radius of the middle surface and the shell's thickness respectively.

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γ - specific weight of the material,
$q(t)$ - rate of an external pressure and
∇^2 - two-dimensional Laplace operator.

If Eqs (1.3) and (1.4) are substituted into Eq (1.2), then its integral can be represented as Eq (2.1) (Ref 10), the last two terms of which correspond to the tensions in the middle surface. The deformation of this surface can be calculated from Eq (2.3) or Eq (2.5). The condition of compactness in respect to the variable v has the form, Eq (2.6) which when substituted into Eq (2.5) will give the parameter φ (Eq 2.7) determined by the expressions ψ and f_1. These can be found from the Bubnov-Galerkin formulae (3.1) to (3.10). The relationship of the parameters of deflection and the time can be derived from Eqs (4.1) and (4.2), which when substituted into Eq (3.4) will define the expressions (4.3) and (4.4), where
V - velocity of elastic waves in the shell,
ζ_1 - the indicator of deflection (Eq 4.5).

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Figs 1 and 2 illustrate the function $\zeta_1(t^0)$. The first group of curves in Fig 1 corresponds to the solution for $c \to 0$ (Eq 4.3). The shape of the curve depends on the number of waves n generated by buckling of the shell (e.g. point A, $n = 6$). The second group of curves represents the value of n for the dynamic load with rate of pressure increase $c = 2 \times 10^3$ atm/sec. The value of t^0 (Eq 4.2) determines the ratio of the variable pressure q to its critical value q_* for a given n. Fig 2 illustrates two other groups of curves corresponding to $c = 10^4$ and $c = 2 \times 10^4$ atm/sec. Similar results were obtained for the case where the dynamic load was in the form of the axial compression, i.e. $q = 0$ in Eq (1.1). The values of the initial and total deflections in this case can be calculated from Eq (6.1) and the various parameters found from Eq (6.2). An expression of the Eq (4.3) type in this case will have the form of Eqs (6.3) and (6.4). The parameter ψ can be determined from Eq (3.2).

Card 3/4 The character of $\zeta_1(t^0)$ defined from Eq (6.3) is the

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same as that in the first case.
There are 2 figures and 11 references, 6 of which are Soviet, 4 English and 1 German.

SUBMITTED: December 19, 1958

14 (10)
AUTHORS: Vol'mir, A. S., Mineyev, V. Ye. 507/20-125-5-13/61

TITLE: The Experimental Investigation of the Process of the Buckling of a Shell Under a Dynamic Load (Eksperimental'noye issledovaniye protsessa vypuchivaniya obolochki pri dinamicheskom nagruzhenii)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 5, pp 1002 - 1003 (USSR)

ABSTRACT: M. A. Lavrent'yev and A. Yu. Ishlinskiy (Ref 1) described an experiment in which a cylindrical tube was suddenly compressed by the application of water pressure. In those parts of the tube which were located in closer proximity of the source of disturbance, greater V stability losses were observed. The present paper describes the results obtained by experiments in which such an effect was quantitatively evaluated. The experimental arrangement consisted of 2 reservoirs which were arranged so that one contained the other, and were filled with oil. The sample, which had the shape of a round cylindrical shell, is located in the inner reservoir, and the upper frontal surface remains free. In the outer reservoir increased pressure (5 to 50 at) is generated. The sudden opening of the valve

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in the inner reservoir causes a hydraulic shock which is conveyed to the sample. The time dependence of pressure in some points of the reservoir is measured by means of special primary elements, and the signals originating from it are recorded on the band of a loop oscillograph. The primary elements of chmic resistance fastened to the outer and inner surfaces of the sample make it possible to measure the elongations at the corresponding points. Also the deflections of these primary elements were transmitted to the oscillograph. In these experiments the pressure difference between the outer and the inner reservoir and also the time during which the valve remains open was varied, so that it was possible to attain various rates at which pressure increased (within the limits of from 2000 to 6500 at/sec). The oscillogram for testing one of these samples is shown by a figure. In the first period of dynamic load the deformations have the same sign (acceleration). Then the deformation of the inner surface quickly changes its sign, and this corresponds to the instant of time at which the shell becomes buckled. For some samples the critical load was determined as a function of the rate at which pressure in-

creased. Besides, a table shows the coefficient of dynamic load. With increasing loading speed the form of wave-formation changes, and this manifests itself also by the increase of the number of waves on the periphery. Besides, the bearing capacity of the shell at the stage of being under load increases considerably. These data correspond to the results obtained by solving the nonlinear problem of the stability of the shells under dynamic load. V. S. Smirnov assisted in carrying out the experiments. There are 2 figures, 1 table, and 3 Soviet references.

ASSOCIATION: Voyenno-vozdushnaya inzhenernaya akademiya im. N. Ye. Zhukovskogo (Academy for Air-force Engineers imeni N. Ye. Zhukovskiy)

PRESENTED: December 23, 1958, by Yu. N. Rabotnov, Academician

SUBMITTED: December 23, 1958

V c LMIK, A.S.

report presented at the 1st All-Union Congress of Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb '60.

1. A. A. Abbasov, A. F. Kasimov, Ia. A. Amirov (Baku): Supersonic motions of visco-plastic solids and the basis for improving well cementation.

2. A. A. Abbasov, V. M. Makhiliev, A. A. Mirzadzam (Baku): Heat transfer in moving viscous and visco-plastic solids.

3. B. L. Abramian (Erevan): Torsion of cylindrical shafts.

4. B. L. Abramian, A. A. Babloian (Erevan): Torsion of circular hollow shafts with longitudinal notches.

5. I. L. Agamirov, A. S. Volmir, V. E. Mineev (Moscow): Buckling and post-buckling behavior of shells under dynamic loading.

6. A. Ia. Aleksandrov (Novosibirsk): Some relations between the solutions of plane and axisymmetrical problems in the theory of elasticity.

7. A. Ia. Aleksandrov (Novosibirsk): Experimental investigation of plane elastic-plastic problems by means of photoelastic films.

8. V. M. Aleksandrov, Iu. A. Sotinov (Rostov-on-Don): Some contact problems in elasticity.

9. N. A. Aleksandrian, N. Kh. Arutiunian, M. M. Manukian (Erevan): Torsion of prismatic bars under transient creep.

10. E. A. Alekseev (Moscow): Two-dimensional bodies of equal strength.

11. N. A. Alumäe (Tallin): Axisymmetrical vibration of an elastic conical shell.

12. S. A. Ambartsumian (Erevan): On the theory of anisotropic shells and plates.

13. S. A. Ambartsumian, L. A. Movsisian (Erevan): Some problems in the theory of anisotropic (non-orthotropic) shells.

14. I. Ia. Amiro (Kiev): Stability analysis of a stiffened cylindrical shell under axial compression.

15. V. V. Andreev, A. M. Kosevich, L. V. Tanatarov (Kharkov): The inelastic deformation and residual strains in a plane layer of a solid under allotropic transformations.

16. L. B. Aramanovich (Moscow): The stress distribution in a heavy half-space with a circular hole, the edge of which is subject to non-equilibrated forces.

17. M. Arsan, M. Teodorescu (Bucharest): Photoelastic model studies of cracked reinforced concrete beams.

18. N. Kh. Arutiunian (Erevan): The plane contact problem of the theory of creep.

19. E. V. Anosova, V. I. Zatsepina, A. A. Trapeznikov (Moscow): Shear strengths and limits of reversible strains of solutions and gels of some rubbers.

20. A. K. Baida (Leningrad): The general solution of the problem of elastic strains in a cylinder of finite length.

21. G. I. Barenblatt (Moscow): The theory of equilibrium cracks under brittle rupture.

22. G. M. Bartenev (Moscow): Rheological properties of rubber-like polymers.

23. M. F. Barshtein (Moscow): Dynamic design of structures subjected to random effects.

24. N. P. Bashlabagina (Moscow): Temperature distribution in container and metal during extrusion.

25. Bui on Pin (Peking), Shun Yasho-Yuan (Tsinghua), G. S. Shapiro (Moscow): On the dynamics of rigid-plastic structures.

26. V. G. Berezantsev (Leningrad): The theory of the limit state of stress in soil mechanics and its applications.

27. A. Ia. Birkgan, A. S. Volmir (Moscow): The use of electronic digital computers for solving non-linear problems in the theory of plates and shells.

28. V. I. Blokh (Kharkov): Stress displacement functions.

29. V. A. Botin (Dnepropetrovsk): Difference-variational methods of the theory of structures.

30. V. I. Dubko (Kiev): On solving Hertz's contact problem with interior fields of plasticity.

31. V. V. Bolotin (Moscow): Method of space transformations in the non-linear theory of plates and shells.

32. V. V. Bolotin (Moscow): The non-linear problems of aero-elasticity at supersonic speeds.

33. V. V. Bolotin (Moscow): Strength and damage under action of random forces.

34. V. V. Bolotin (Moscow): The statistical theory of seismic design of structures.

Volmir, A.S.

report presented at the 1st All-Union Congress of Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb '60.

1. A. A. Abbasov, A. F. Kasimov, Ia. A. Shvarts (Baku): Supersonic motions of visco-plastic solids and the basis for improving well cementation.

2. A. A. Abbasov, V. M. Makhlyev, A. A. Mirsalan (Baku): Heat transfer in moving viscous and visco-plastic solids.

3. B. L. Abramian (Erevan): Torsion of cylindrical shafts.

4. B. L. Abramian, A. A. Babloian (Erevan): Torsion of circular hollow shafts with longitudinal notches.

5. [illegible], A. S. Volmir, V. E. Minaev (Moscow): Buckling and post-buckling behavior of shells under dynamic loading.

6. A. Ia. Aleksandrov (Novosibirsk): Some relations between the solutions of plane and axisymmetrical problems in the theory of elasticity.

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26. V. G. Berezantsev (Leningrad): The theory of the limit state of stress in soil mechanics and its applications.

27. A. Ia. Birman, A. S. Volmir (Moscow): The use of electronic digital computers for solving non-linear problems in the theory of plates and shells.

28. V. I. Blokh (Kharkov): Stress displacement functions.

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33. V. V. Bolotin (Moscow): Strength and damage under action of random forces.

34. V. V. Bolotin (Moscow): The statistical theory of seismic design of structures.

MUSHTARI, Kh.M., red.; ALUMYAE, N.A., red.; BOLOTIN, V.V., red.; VOL'MIR, A.S., red.; GANIYEV, N.S., red.; GOL'DENVEYZER, A.L., red.; ISANBAYEVA, F.S., red.; KIL'CHEVSKIY, N.A., red.; KORNISHIN, M.S., red.; LUR'YE, A.I., red.; SAVIN, G.N., red.; SACHENKOV, A.V., red.; SVIRSKIY, I.V., red.; SURKIN, R.G., red.; FILIPPOV, A.P., red.; ALEKSAGIN, V.I., red.; SEMENOV, Yu.P., tekhn. red.

[Proceedings of the Conference on the Theory of Plates and Shells] Trudy Konferentsii po teorii plastin i obolochek, Kazan', 1960. Kazan', Akad. nauk SSSR, Kazanskii filial, 1960. 426 p. (MIRA 15:7)

1. Konferentsiya po teorii plastin i obolochek, Kazan', 1960. 2. Moskovskiy energeticheskiy institut (for Bolotin). 3. Kazanskiy khimiko-tekhnologicheskiy institut (for Ganiyev). 4. Institut mekhaniki Akademii nauk USSR (for Kil'chevskiy). 5. Kazanskiy gosudarstvennyy universitet (for Sachenkov). 6. Kazanskiy filial Akademii nauk SSSR (for Svirskiy). (Elastic plates and shells)

VOLMIR, A. S. (Moscow)

"Stability and Postbuckling Behaviour of Shells under Dynamic Loading."

report submitted for the Xth International Congress of Applied Mechanics, Stresa, Italy, 31 Aug - 7 Sep 60.

VOL'MIR, A.S. (Moskva)

Strength of compressed rods subjected to dynamic loads.
Stroi.mekh.i rasch.sooor. 2 no.1:6-9 '60.
(MIRA 13:6)

(Elastic rods and wires)

S/020/60/135/005/012/02
B019/B067

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18.8200

AUTHORS: Birkgan, A. Yu. and Vol'mir, A. S.

TITLE: Study of the Dynamic Stability of Plates by Means of Digital Computers

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 5, pp. 1083-1085

TEXT: The problem of the stability and the supercritical behavior of a plate under dynamic load is solved by a digital computer using finite differences. The authors determine the changes of bendings and stresses with time. They proceed from equations in dimensionless parameters

$$c^2\nabla^2 w = w,xx\,(\Phi,yy - p) + w,yy\,\Phi,xx - 2w,xy\,\Phi,xy + c\nabla^2 w_o - w,tt \quad (1)$$

$$\nabla^2\nabla^2\Phi = w,xy^2 - w,xx\,w,yy - (w_{o,xy}^2 - w_{o,xx}\,w_{o,yy}) \quad (2)$$

Here, $w = \bar{w}/h$, $w_o = \bar{w}_o/h$, $\Phi = \bar{\Phi}/Eh^2$, $x = x/a$, $y = y/a$, $t = thV/a^2$,

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$p = (\bar{p}/E)(a/h)^2$, $c = 1/(12(1-\mu^2))$, and $\bar{w}(\bar{x}, \bar{y}, \bar{t})$ and $\bar{w}_o(\bar{x}, \bar{y})$ denote the total and the initial bendings, $\Phi(x, y, t)$ the stress function in the center of the surface, $\bar{p}(t)$ the force, v the velocity of sound. The differential equations (1) and (2) were transformed into difference equations which under appropriate boundary conditions were calculated by means of an M-20 (M-20) type digital computer. At low loading velocities, violent bending occurs with $p \approx 1.8 p_{cr}$, which is accompanied by nonlinear oscillations. $p_{cr} = \pi^2/3(1-\mu^2)$ is designated as critical static tension. In the case of high loading velocities ($p = 5t$), bending rapidly increases with $p \approx 2.6 p_{cr}$.

In the following, the bending direction is reversed. There are 3 figures and 3 Soviet references.

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PRESENTED: June 28, 1960, by N. I. Muskhelishvili, Academician

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I071/I242

AUTHOR: Vol'mir, A.S., Prof., Dr. of Technical Sciences (Moscow)

TITLE: The stability of plates under plastic deformation

SOURCE: Raschet prostranstvennych konstruktsiy; sbornik statey, no.6, Moscow, 1961, 149-188

TEXT: Stability means the absence of infinitely close stable positions. The problem is studied with the help of the theory of elastic-plastic deformations (non-linear elasticity) and the theory of flow. The principal results in the first theory were obtained by Ilyushin and in the second by Prager, by Pearson and by Katchanov. The chapter headings are: 1. Applications of plasticity theory to problems of stability plates. 2. Theory of deformations. Fundamental relations. 3. Basic differential relation in the case of incompress-

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ible material. 4. Application of variation methods. 5. Stability of a freely supported plate compressed in one direction. 6. Establishment of the basic equation without consideration of the unloading effect. 7. Uniaxial compression of a freely supported plate. 8. Other boundary conditions. 9. Stability of a plate under deformation. 10. Generalization of the deformation theory for the case of compressible material. 11. Fundamental relations of flow theory. 12. Solution of particular problems. 13. Influence of compressibility in flow theory. 14. Computational data for duraluminum and steel. 15. Data for practical computations. Experiments show that, as with bars, the critical values computed by the flow theory are higher while those computed by the theory of elasto-plastic deformations are lower than the experimental. Except for plates with initial irregularities, the latter theory is preferred. There are 33 references.

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